Cisco Unity Express Voice-Mail and Auto-Attendant CLI Administrator Guide for 3.0 and Later Versions

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Cisco Unity Express Voice-Mail and Auto-Attendant CLI Administrator Guide for 3.0 and Later Versions

CONTENTS

CHAPTER 5

CHAPTER 1

Cisco Unity Express Features

This guide describes the set of Cisco Unity Express CLI commands and tasks for configuring, managing, and maintaining Cisco Unity Express applications, such as voice mail.

This guide complements the GUI administration tasks described in the *Cisco Unity Express GUI Administrator Guide*.

The focus of this guide is the Cisco Unity Express application. It does not provide information on installation of Cisco routers, Cisco network modules, Cisco Unified Communications Manager Express router., or Cisco Unified Communications Manager server. For more information about those topics, see *Cisco Unity Express Documentation, By Version*.

This chapter contains the following sections:

Platforms and Cisco IOS Software Images

Cisco Unity Express applications use a set of commands that are similar in structure to Cisco IOS software commands. However, Cisco Unity Express commands do not affect the Cisco IOS configuration.

See the *Release Notes for Cisco Unity Express* for detailed information about the Cisco Unity Express hardware and software platforms.

Note We highly recommend attaching an uninterruptible power supply (UPS) to the router housing the Cisco Unity Express module. Any reliable UPS unit provides continuous power to maintain the operation of the router and the Cisco Unity Express module. Consider the unit’s capacity and run time because power consumption differs among Cisco platforms. Ideally, a UPS should include a signaling mechanism that directs the router to shut down Cisco Unity Express properly and then powers off the router.

Supported Cisco Unified IP Phones

See the *Release Notes for Cisco Unity Express 8.6* for details about supported Cisco Unity IP phones.

Cisco Unity Express Feature List

Table 1-1 lists Cisco Unity Express features by version. Features that are introduced in a particular version are available in that and subsequent versions.

Tip Table 1-1 describes how to configure each feature using the GUI, where applicable. For information about how to use the GUI to configure a feature, see the online help at:

- *Configuring Cisco Unity Express Using the GUI: Privilege Mode for Cisco Unified Communications Manager*
- *Configuring Cisco Unity Express Using the GUI: Privilege Mode for Cisco Unified Communications Manager Express*
- *Configuring Cisco Unity Express Using the GUI: Administrator User Mode for All Licenses*

Table 1-1 Cisco Unity Express Features by Version

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
8.6	Support for Cisco Unity Express on SM-SRE-710-K9 and SM-SRE-910-K9 Services Ready Engine (SRE) modules	Provides support for Cisco Unity Express on SM-SRE-710-K9 and SM-SRE-910-K9 Services Ready Engine modules for the Cisco 2900 Series and Cisco 3900 Series routers.	• See *Release Notes for Cisco Unity Express 8.6*. • See *Cisco SRE Service Module Configuration and Installation Guide.*
	Editor Express Enhancements	Enhancements have been made to the GUI for Editor Express. Additional menu options have been added.	• See the online help and *Configuring Cisco Unity Express 8.6 Using the GUI*.
	Fax Preview	Fax Preview displays a preview of the fax message attachment in the VoiceView Express interface on the screen of Cisco IP Phones. Fax Preview is supported on selected Cisco Unified IP phones. See the *Release Notes for Cisco Unity Express 8.6* for more information.	• See the *Cisco Unity Express 8.6 User's Guide for Advanced Features* and the *Cisco Unity Express 8.6 VoiceView Express Quick Start Guide*.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Secure Messaging	Secure messaging allows you to configure the secure messaging settings globally or for individual mailboxes. Messages marked secure can only be accessed if the subscriber accesses Cisco Unity Express Web Voicemail using a secure HTTPS session.	• From the CLI, see Configuring Secure Messaging. • From the GUI: Use the **Voice Mail** > **VM Configuration** option for configuring the global secure messaging setting, and the **Voice Mail** > **Mailboxes** option for configuring the secure messaging setting for a mailbox.
	Support for New IMAP Clients	Provides support for the following IMAP clients new in this release: • IP Phone third party clients • Cisco Mobile 8.0 • Microsoft Outlook 2010 • Microsoft Entourage 2008 • Microsoft Windows Live Mail 12.0 • IBM Lotus Notes 8.5 • IBM Lotus Notes 8.0 • IBM Lotus Notes 7.0	• From the CLI, see Configuring IMAP. • From the GUI: Use the **Voice Mail** > **Integrated Messaging** > **Service Configuration** option.
	Support for Client Services Framework (CSF) clients	Provides support for the following clients that use the Client Services Framework (CSF): • Cisco Unified Personal Communicator (CUPC) 8.5 • Cisco Unified Communications Integration™ for Microsoft Office Communicator 8.0	• From the CLI, see Configuring IMAP. • From the GUI: Use the **Voice Mail** > **Integrated Messaging** > **Service Configuration** option.
	Support of additional languages	Provides support for the following new languages for voice-mail prompts: • Traditional Chinese (Taiwan) • Hong Kong Chinese	See the *Release Notes for Cisco Unity Express 8.6*.
8.5	Support for Cisco Unity Express on SM-SRE-900-K9 Services Ready Engine (SRE) module	Provides support for Cisco Unity Express on SM-SRE-900-K9 Services Ready Engine modules for the Cisco 2900 Series and Cisco 3900 Series routers.	• See *Release Notes for Cisco Unity Express 8.5*. • See *Cisco SRE Service Module Configuration and Installation Guide.*

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Web Inbox GUI for VoiceMail Subscribers	Provides a separate web-based user GUI for voicemail subscribers to configure subscriber settings. Functions available through the web user GUI include: • Creating greetings • Recording the spoken name • Modifying the personal profile and the GDM profile • Adding and deleting private distribution lists • Selecting how to be notified when receiving a voicemail • Having Cisco Unity Express transfer the call to another number	• See the GUI online help.
8.0	Support for Cisco Unity Express on SM-SRE-700-K9 Services Ready Engine (SRE) module	Provides support for Cisco Unity Express on SM-SRE-700-K9 Services Ready Engine modules for the Cisco 2900 Series and Cisco 3900 Series routers.	• See *Release Notes for Cisco Unity Express 8.0*. • See *Cisco SRE Service Module Configuration and Installation Guide.*
	Auto Configuration	When the system boots initially after a clean installation, the administrator is prompted whether to configure the system. If no response is provided within 120 seconds, and there is no default configuration or startup configuration, the system auto configures Cisco Unity Express to the following settings: • Default primary NTP server to the host router • Time zone set to GMT • Call agent set to CCM • DNS set to nothing	
	Message Notification enhancement	Enables an administrator to append a prefix message before a system-wide notification or a signature message after a system-wide notification.	• From the CLI, see Configuring System-Wide Settings. • From the GUI: Use the **Voice Mail > Message Notification > Subscriber Notification Management** option.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	New AAA user steps for Cisco Unity Express Script Editor	Cisco Unity Express Script Editor supports four new AAA user steps: • User Authenticate: Authenticates a user based on username/password or extension/PIN • Authorize User: Authorizes a user based against an operation or a privilege • Audit Step: Step for logging audit information for the user • Logout User: Logs out a previously authenticated user from the system	• See the *Cisco Unity Express Guide to Writing and Editing Scripts for 7.0 and Later Versions*
	Programmatic Interface for XML	Provides a set of well defined API and data structures which external software systems can invoke to perform configurations on the Cisco Unity Express system. The programmatic interface is supported in Cisco Unity Express 8.0 and later versions. The Cisco Unity Express programmatic interface is implemented as a web service. Like most web services, it uses HTTP as the communication protocol and XML documents for exchanging information between client and server. The service is based on Representational State Transfer (REST) architecture and uses JAX-RS specifications for implementation. The Cisco Unity Express programmatic interface provides access for configuration purpose only	See the *Cisco Unity Express Programmatic Interface Service Programming Guide*.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Stored Caller Name	Cisco Unity Express 8.0 adds support for storing the caller's name if the caller is a non-subscriber. When Cisco Unity Express receives the calling party name for a subscriber or non-subscriber in the SIP or JTAPI signaling, Cisco Unity Express 8.0 stores the calling party name, the calling party number and the message itself. For new voicemails being deposited through the TUI, Cisco Unity Express now stores the calling party name along with the message if the name is present in the call signaling. For fax messages received by Cisco Unity Express through SMTP, the system stores the display name present in the RFC 5322 From header field along with the fax message. For messages received through VPIM, Cisco Unity Express now stores the display name present in the From header field along with the message. When a sender name is available for a message, the system includes that name (in textual form) in IMAP, VVE, Web voicemail, message notifications and in SIP MWI notifications containing message envelope information.	
	System Backup enhancements	Enables an administrator to configure the system to notify specific users about the status of a scheduled backup operation.	• From the CLI, see Configuring Scheduled Backup Notification. • From the GUI: Use the **Administration > Backup/Restore > Scheduled Backups** option.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Voicemail User GUI	Voicemail subscribers can access Cisco Unity Express voicemail using the GUI. Functions available through the user GUI include: • Creating greetings • Recording the spoken name • Modifying the personal profile and the GDM profile • Adding and deleting private distribution lists • Selecting how to be notified when receiving a voicemail • Have Cisco Unity Express transfer the call to another number	
	Wildcard match for pilot number	Allows an administrator to use wildcard characters when specifying SIP and JTAPI trigger numbers.	• From the CLI, see Configuring SIP Triggers for the Applications.
7.4	Release provides continued support for Cisco Unity Express AIM-CUE. No other hardware platforms are supported in this release.		• See *Release Notes for Cisco Unity Express 7.4*.
7.3	Release provides continued support for Cisco Unity Express AIM-CUE. No other hardware platforms are supported in this release.		• See *Release Notes for Cisco Unity Express 7.3*.
7.2	Release provides continued support for Cisco Unity Express AIM-CUE. No other hardware platforms are supported in this release.		• See *Release Notes for Cisco Unity Express 7.2*.
7.1.2	Support for Cisco Unity Express on ISM-SRE-300-K9 Services Ready Engine (SRE) module	Provides support for Cisco Unity Express on the ISM-SRE-300-K9 Services Ready Engine module for the Cisco 2900 Series and Cisco 3900 Series routers	• See *Release Notes for Cisco Unity Express 7.1*. • See *Cisco SRE Service Module Configuration and Installation Guide*
	Support for AIM2-CUE module.	The AIM2-CUE module is a replacement for the existing AIM-CUE module. Unless otherwise noted, the performance and system capacities are the same on both modules in this release.	• See *Release Notes for Cisco Unity Express 7.1*.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
7.1.1	Phone and platform support.	Supports the use of new phones with VoiceView Express and support for interoperability with new versions of Cisco Unified Communications Manager, Cisco Unified Communications Manager Express, Cisco Unity, and Cisco Unity Connection.	• For a list of the phone models and application versions supported, see the *Cisco Unity Express Compatibility Matrix*, for links to the compatibility information for each call control application.
	New software activation method	Support for Cisco Software Licensing (CSL). Beginning with Cisco Unity Express 7.1.1, software licenses must be activated prior to use.	For more information, see *Software Activation for Cisco Unity Express 7.1 and Later Versions*.
	Caller input	Enables callers to control how the call flow precedes by pressing keys. For each mailbox, the mailbox owner or system administrator can assign actions to the keys such as: • Transfer the call to another number • Connect to the operator • Repeat the greeting	• From the CLI: See Configuring Call Flow Customization. • From the GUI: Use the **Voice Mail > Mailboxes** option and the online help
	Scheduled backups	Enables you to configure up to five recurring scheduled backup jobs and five one-time scheduled backup jobs.	• From the CLI: See Configuring Scheduled Backup Jobs. • From the GUI: Use the **Administration > Backup/Restore > Scheduled Backups** option and the online help
	Announcement-Only mailboxes	Enables you to configure announcement-only mailboxes. These mailboxes can only play the user greeting and disconnect the call; they cannot take any messages from callers or send messages.	• From the CLI: See Configuring an Announcement-Only Mailbox. • From the GUI: Use the **Voice Mail > Mailboxes** option and the online help
	Multiple greetings	Enables users and Administrators to: • Record multiple greetings • Select which greetings to use • Enable or disable greetings	• From the CLI: See Configuring Multiple Greetings • From the GUI: Use the **Voice Mail > Mailboxes** option and the online help

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
7.0	Authentication, Authorization, and Accounting (AAA)	Expands on the authentication and authorization functionality available in previous releases. New features include the ability to configure: • Privileges • Accounting events logging • AAA policy • Console authentication • Accounting server parameters • Authenticating server parameters	• From the CLI: See • From the GUI: Use the following options and the online help: – **Configure > AAA** – **Configure > Privileges**
	TimeCardView	TimeCardView is a separate application used in conjunction with Cisco Unity Express to track time and attendance for workers in a business.	*TimeCardView 7.0 CLI Administrator Guide* *TimeCardView 7.0 for Users Quick Start Guide*
3.2	Centralized Cisco Unity Express	Enables Cisco Unity Express NME to interoperate with up to ten Cisco Unified CME systems.	• See the documentation for *Cisco Unified Messaging Gateway 1.0*. • From the CLI: See Configuring Centralized Cisco Unity Express • This feature cannot be configured using the GUI.
	Voice mailbox PINless login	Enables subscribers to log in to their mailbox without a PIN. Access can be configured to be allowed from either: • The voice mailbox owner's extension or E.164 number • Any phone	• From the CLI: See Configuring PINless Mailbox Access • This feature cannot be configured using the GUI.
	Nonsubscriber distribution lists	Enables you to add nonsubscribers to distribution lists. This enables the delivery of voice messages to people who do not have a mailbox on the system by using a single address to reference a list of addresses when sending the message.	• From the CLI: See Configuring NonSubscriber Distribution Lists for Centralized Cisco Unity Express • From the GUI: Use the **Voice Mail > Distribution Lists** option and the online help.
	Banner support	Enables you to configure a system wide login banner that is displayed to all users when they log in to the CLI or GUI and prompts the user for credentials.	• From the CLI: See Banner Support • This feature cannot be configured using the GUI.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Inclusion of envelope information in SIP MWI notifications	Enables you to determine whether envelope information is included in SIP MWI notifications	- From the CLI: See Configuring the Inclusion of Envelope Information in SIP MWI Notifications - This feature cannot be configured using the GUI.
	Certificate Association for HTTPS and IMAP	Associates a certificate key for HTTPS and IMAP. Associates a certificate key for HTTPS, or associates a certificate key for SSL on IMAP.	- From the CLI: For HTTPS, see Enabling HTTPS Access to the Cisco Unity Express GUI (Versions 3.2 and Higher). For IMAP, see Configuring IMAP. - This feature cannot be configured using the GUI.
3.1	Support for Cisco Unified Communications Manager 6.1 and 4.3(1)	Cisco Unity Express 3.1.2 supports interoperability with Cisco Unified Communications Manager 4.3(1). Cisco Unity Express 3.1 provides interoperability with Cisco Unified Communications Manager 6.1.	See the documentation for *Cisco Unified Communications Manager 6.1 and 4.3(1)*.
	Support of additional languages	Provides support for several new languages for voice-mail prompts.	See the *Release Notes for Cisco Unity Express 3.1* for a list of available languages.
	Support for automatic registration with Cisco Unified Messaging Gateway 1.0	Provides automatic registration and interoperability with Cisco Unified Messaging Gateway 1.0, which provides a tool for system administrators to manage large numbers of Cisco Unity Express endpoints in a distributed network.	- See the documentation for *Cisco Unified Messaging Gateway 1.0*. - From the CLI: See Registering Cisco Unity Express Endpoints to Cisco Unified Messaging Gateway - This feature cannot be configured using the GUI.
	Support for storing historical reports on remote sites	In release 3.0, historical reports about call activities and application activities on the system could only be stored locally. Beginning with release 3.1, the historical reports can be stored on remote databases.	- See the *Cisco Unified Communications Express Historical Reporting Client Configuration Guide*. - From the CLI: See Configuring Historical Reporting - From the GUI: Use the **Administration > Historical Reporting** option and the online help.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	New voice mail subscriber feature	Provides voice-mail users with the option of searching a global directory if an extension is not found when addressing a message by name or number. This feature is only available if the voice-mail system is running in an environment managed by the Cisco Unified Messaging Gateway.	See the documentation for *Cisco Unified Messaging Gateway 1.0*.
3.0	Fax	Extends the convergence feature set to include fax support. It allows both inbound and outbound faxes. Outbound faxes can be printed to the fax machine.	• From the CLI: See Configuring System-Wide Fax Parameters • From the GUI: Use the **System > Fax Settings** option and the online help.
	Cascading Message Notification	Extends the existing message notification feature that was introduced in 2.3(1). With this feature, you can: • Set up a series of cascading notifications to recipients • Enable subscribers to define time-based rules that determine how the notification is cascaded to other local subscribers.	• From the CLI: See Cascading Message Notification • From the GUI: Use the **Voice Mail > Message Notification** option and the online help.
	Live Record	Enables Cisco Unity Express subscribers to record live conversations and store the recording as a message in their mailbox. They can then play it or forward it to another subscriber or group of subscribers.	• From the CLI: See Configuring Live Record • From the GUI: Use the **Voice Mail > VM Configuration** option and the online help.
	Live Reply	Enables Cisco Unity Express subscribers to make a phone call to a voice message's sender while listening to the message, by pressing 4-4.	• From the CLI: See Configuring Live Reply • From the GUI: Use the **Voice Mail > VM Configuration** option and the online help.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Historical reports	Provides historical reports about call activities and application activities on the system.	• See the *Cisco Unified Communications Express Historical Reporting Client Configuration Guide*. • From the CLI: See Configuring Historical Reporting • From the GUI: Use the **Administration > Historical Reporting** option and the online help.
	Script Editor Express	Provides a simplified GUI that enables you to create and modify autoattendant scripts that can be opened/viewed on the Cisco Unity Express editor.	• From the GUI: Use the **System > Scripts** option (click the **New** button) and the online help.
	Fixed holidays	Enables you to configure specific dates as fixed or permanent holidays.	• From the CLI: See Configuring Holiday Lists • From the GUI: Use the **System > Holiday Settings** option and the online help.
	Nonsubscriber message delivery	Enables Cisco Unity Express subscribers to record a voice message and send it to an external number or nonsubscriber. The message can be sent immediately or can be scheduled to be sent in the future, up to 1 year in advance.	• From the CLI: See Configuring Nonsubscriber Message Delivery • From the GUI: Use the **Voice Mail > VM Configuration** option and the online help.
	New method of sending voice mail	Provides Cisco Unity Express script developers with a new step: "Send Voice Message." It enables them to be able to generate a message on the fly by concatenating some prompts and sending it to a Cisco Unity Express subscriber.	No configuration is required for this feature. For more information, see the *Cisco Unity Express Guide to Writing and Editing Scripts.*
	Leaving multiple voice messages in the same session	Enables callers to leave multiple voice messages for the same or different subscriber without having to be transferred to the operator first.	• From the CLI: See Configuring System-Wide Voice-Mail Parameters • This feature cannot be configured using the GUI.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Use of a voice-mail summary prompt during subscriber login	Provides a system-wide configuration option to enable subscribers to hear a summary of the new messages in the corresponding General Delivery Mailboxes (GDMs) during login.	• From the CLI: See Configuring System-Wide Voice-Mail Parameters • This feature cannot be configured using the GUI.
	Message properties (envelope) customization	Enables you to customize voice mail message playback preferences, such as whether subscribers hear detailed message properties when they retrieve a message using the TUI.	• From the CLI: See Configuring System-Wide Voice-Mail Parameters • This feature cannot be configured using the GUI.
	Default addressing for sending a voice message	Enables you to specify whether voice messages are addressed by name or extension be default at the system level for all features.	• From the CLI: See Configuring System-Wide Voice-Mail Parameters • This feature cannot be configured using the GUI.
	Restriction tables	You can now restrict access to the functionality of these features: • Fax • Message notification • Nonsubscriber message delivery • Live reply	• From the CLI: See Configuring Restriction Tables • From the GUI: Use the **System > Restriction Tables** option and use the online help.
	Language support	Enables you to install and use more than one language concurrently on the Cisco Unity Express module.	• From the CLI: See Configuring System-Wide Voice-Mail Parameters • From the GUI: Use the **System > Language Settings** option and use the online help.
	Backup and restore using SFTP	Enhances the backup and restore functionality to use the Secure File Transfer Protocol (SFTP) for transferring files to and from the backup server. SFTP provides data integrity and confidentiality that is not provided by FTP.	• From the CLI: See Backup and Restore Using SFTP • From the GUI: Use the **Administration > Backup/Restore** option and use the online help.
	Backup Server Authentication Using a SSH Host Key	Enables you to authenticate the backup server using the SSH protocol before starting a backup/restore operation.	• From the CLI: See Backup Server Authentication Using a SSH Host Key • This feature cannot be configured using the GUI.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Encryption and Signing of Backup Content on the Server	Enables you to protect backed up configuration and data files using signing and encryption before the files are transferred to the backup server.	• From the CLI: See Encrypting and Signing of Backup Content on the Server • This feature cannot be configured using the GUI.
	Encrypting stored PINs	Before 3.0, PINs were stored as clear text on the Cisco Unity Express module. Now, they are encrypted.	No configuration is required for this feature.
	Increased password and PIN protection	Provides both temporary and permanent lockout for passwords and PINs to help prevent security breaches.	• From the CLI: See Configuring Password and PIN Parameters • From the GUI: Use the **Configure > User Defaults** option and use the online help.
	Using HTTPS to access the GUI	You can use HTTPS to secure the transmission of GUI pages between the browser and the Cisco Unity Express system.	• From the CLI: See Enabling HTTPS Access to the Cisco Unity Express GUI (Versions 3.0 and 3.1) • From the GUI: This feature cannot be configured using the GUI.
	PIN and Password History	Enables the system to track previous PINs and passwords for all users and prevent users from reusing old PINs and passwords.	• From the CLI: See Configuring Password and PIN Parameters • From the GUI: Use the **Configure > User Defaults** option and use the online help.
2.3	Support of additional languages	Provides support for several new languages for voice-mail prompts. For Version 2.3, only one can be installed on the system.	See the *Release Notes for Cisco Unity Express 2.3* for a list of available languages.
	Increased system capacity	Provides support for increased number of mailboxes, increased number of remote and cached users, larger storage capacity, and larger number of public distribution lists.	• From the CLI: See Recording a Prompt File • This feature cannot be configured using the GUI.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Integrated Messaging	Cisco Unity Express voice-mail subscribers can access and manage their voice messages and e-mail using an e-mail client on a single PC.	• From the CLI: See Configuring Advanced Voice Mail • From the GUI: Use the **Voice Mail > Integrated Messaging** option and the online help.
	Message Notification	Cisco Unity Express can notify voice-mail subscribers of new voice messages on their cell phones, home phones, work phones, numeric pagers, text pagers, and e-mail inboxes.	• From the CLI: See Configuring Message Notification • From the GUI: Use the **Voice Mail > Message Notification** option and the online help.
	VoiceView Express	Cisco Unity Express voice-mail subscribers can browse, listen, manage, and send voice messages and manage their mailbox options from their Cisco Unified IP phone. VoiceView Express is supported on selected Cisco Unified IP phones. See the *Release Notes for Cisco Unity Express 8.6* for more information.	• From the CLI: See • From the GUI: Use the **Voice Mail > VoiceView Express** option and the online help.
	Future message delivery	Voice-mail subscribers can schedule messages to be delivered at a future time to subscribers on local or remote systems.	• From the CLI: See Configuring the Delivery of Future Messages • This feature cannot be configured using the GUI.
	Local broadcast privilege	Voice-mail subscribers with this privilege can send broadcast messages only to other voice-mail subscribers on the local system.	• From the CLI: See Configuring Privileges • From the GUI: Select a group from the **Configure > Groups** option and use the online help.
	Mailbox selection	This configurable option specifies the mailbox in which a voice message is stored.	• From the CLI: See Configuring System-Wide Voice-Mail Parameters • From the GUI: Use the **Defaults > Voice Mail** option and use the online help.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Voice mail box mask	Permits Cisco Unity Express to send a redirected incoming call from Cisco Unified Communications Manager 4.2 to the correct mailbox.	• From the CLI: See Unlocking a Voice Mailbox • This feature cannot be configured using the GUI.
	Consulting call transfers (SIP Call Control only)	Cisco Unity Express permits attended and semiattended call transfer modes in addition to blind transfers.	• From the CLI: See Configuring the Call Transfer Mode • This feature cannot be configured using the GUI.
	DTMF relay (SIP Call Control only)	Handles incoming and outgoing DTMF signals for SIP calls.	• From the CLI: See Configuring DTMF Options • This feature cannot be configured using the GUI.
	MWI Notifications in Cisco SRST mode	Cisco Unity Express includes the MWI status update capability to SRST mode.	• From the CLI: See Configuring the MWI Notification Option • From the GUI: Use the **Voice Mail > Message Waiting Indicators > Settings** option and use the online help.
	Mandatory message expiry	Forces the subscriber to delete messages when they expire.	• From the CLI: See Configuring System-Wide Voice-Mail Parameters • From the GUI: Use the **Defaults > Voice Mail** option and use the online help.
	Cisco Unity Express Script Editor enhancements	Enhanced debugging procedures and two new steps are available.	*Cisco Unity Express 2.3 Guide to Writing Auto-Attendant Scripts*
	Cisco Unity Express GUI enhancements	New configuration screens and options are available through the Cisco Unity Express GUI. These new options as similar to most of the new CLI commands.	*Cisco Unity Express 2.3 GUI Administrator Guide*
	AvT enhancements	Rerecording existing prompts and returning the status of the alternate greeting are new capabilities for the AvT.	• From the CLI: See Configuring the Administration via Telephone Application

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Support for Cisco Unified Communications Manager 4.2 and 5.0	Cisco Unity Express now supports two new versions in addition to Cisco Unified Communications Manager 4.1. Previous versions are not supported.	—
	Change in AIM-CUE support.	Cisco Unity Express does not support the 512 MB AIM-CUE.	—
2.2	CISCO-UNITY-EXPRESS-MIB	Monitor the health, conduct performance monitoring, data collection, and trap management for Cisco Unity Express voice mail and auto attendant applications.	• From the CLI: See Configuring SNMP Monitoring • This feature cannot be configured using the GUI.
2.1	Additional languages support.	Danish, U.K. English, Latin American Spanish, Italian, and Brazilian Portuguese were added as choices for the default language of the telephone user interface (TUI) system prompts and greetings.	*Cisco Unity Express 2.1 Installation and Upgrade Guide*
	Distribution lists.	Create public and private distribution lists of local and remote subscribers for sending messages to more than one subscriber.	• From the CLI: See Configuring Distribution Lists • From the GUI: Use the **Voice Mail > Distribution Lists** option and the online help.
	Broadcast messages.	Privileged subscribers can send messages to all subscribers on the network.	• From the CLI: See Configuring Broadcast Messages • From the GUI: Use the **Configure > Groups** option and the online help.
	Schedules for holidays and business hours.	Create schedules of holidays and business hours to automatically play alternate auto attendant greetings to callers.	• From the CLI: See Configuring Business Hours and Configuring Holiday Lists • *Cisco Unity Express CLI Administrator Guide*. • From the GUI: Use **Voice Mail > Holidays Settings** and **Voice Mail > Business Hours Settings** and the online help.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Increased security for passwords and PINs.	Set minimum lengths and expiry times for passwords and personal identification numbers (PINs).	• From the CLI: See Configuring Password and PIN Parameters • From the GUI: Use the **Defaults > User** option and the online help.
	Support for caller ID information in incoming messages.	Permits playing of caller identification information as part of the message envelope for new incoming voice mail messages.	• From the CLI: See Configuring Caller ID for Incoming Messages
	Addition of remote subscribers to the local directory.	Adds frequently called remote subscribers to the local directory, which permits local subscribers to address voice mail messages to remote subscribers using dial-by-name and to receive spoken name verification of the remote subscriber address.	• From the CLI: See Adding Remote Subscribers to the Local Directory • From the GUI: Use the **Configure > Remote Users** option and the online help.
	Support for vCard information from remote subscribers.	Permits vCard information from remote subscribers to update their directory entries.	• From the CLI: See Configuring a Location with vCard Information and Configuring the LRU Cache • This feature cannot be configured using the GUI.
	Simple auto-attendant script.	Simple aa_simple.aef script is available for handling alternate, holiday, and business hours greetings.	• From the CLI: See Configuring and Managing the Auto-Attendant Application
	Undelete voice messages.	Permits subscribers to restore a voice mail message that was deleted during the current voice message retrieval session.	*Cisco Unity Express Voice-Mail System User's Guide*
	Restore to factory defaults.	Permits the administrator to reset the entire system to the factory default values.	• From the CLI: See Restoring Factory Default Values • This feature cannot be configured using the GUI.
	Increased port density.	Network modules with 512 MB of SDRAM now support 16 voice ports. Advanced integration modules (AIMs) running at 300 MHz now support 6 ports on new router platforms.	• From the CLI: See Recording an Auto-Attendant Greeting or Prompt File • This feature cannot be configured using the GUI.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Repurposing of general delivery mailboxes (GDMs)	GDMs may be repurposed as personal mailboxes, which expands the personal mailbox capacity of each license level.	- From the CLI: See Configuring Mailboxes
2.0	Support for multiple languages	Multiple languages are available in the telephone user interface (TUI) and auto-attendant prompts.	—
	Streamlined software upgrade process	Modified upgrade process to reduce installation time.	*Cisco Unity Express 2.0 Installation and Upgrade Guide*
	Increased storage on the AIM	AIM flash storage capacity can be increased from 512 MB to 1 GB and the 1 GB flash can support 14 hours of voice-mail message storage.	- From the CLI: See Recording an Auto-Attendant Greeting or Prompt File
	Housing Cisco Unity Express and Cisco Unified CME software on different routers	Cisco Unity Express software installed on a router communicates with Cisco Unified CME installed on a different router.	—
	Networking across multiple sites	Voice Profile for Internet Mail version 2 (VPIMv2) support for voice-mail messaging interoperability between Cisco Unity Express sites and between Cisco Unity Express and Cisco Unity with NonDelivery Record (NDR) for networked messages and blind addressing.	- From the CLI: See Networking Cisco Unity Express - This feature cannot be configured using the GUI.
	Support for Cisco Unified Communications Manager Version 3.3(3),3.3(4), and 4.0(1)	Capability of auto detecting the Cisco Unified Communications Manager JTAPI version on a remote system for handling call control and user import functionality.	—
1.1.2	NTP server configuration support	New commands permit configuration of the NTP server.	- From the CLI: See Configuring NTP Servers
1.1	Advanced integration module (AIM) card	AIM card with network connectivity through the PCI interface, and access to Cisco IOS software and the console using back-to-back Ethernet through the parallel interface. No external interfaces or cabling is required.	*Installing Advanced Integration Modules in Cisco 2600 Series, Cisco 3600 Series, and Cisco 3700 Series Routers*

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Custom auto-attendant script creation using the Cisco Unity Express script editor	Script editor creates custom scripts for handling incoming calls to the automated attendant (AA). Activating a custom script deactivates the default auto-attendant script that ships with Cisco Unity Express. The default script cannot be modified. The network module (NM) and the advanced integration module (AIM) support up to four customized autoattendants.	*Cisco Unity Express 1.1 Guide to Writing Auto-Attendant Scripts*
	Alternate auto-attendant greetings and prompts	Recording of alternate AA greetings and prompts that can be uploaded or downloaded as needed. These alternate greetings and prompts are in addition to the default greetings and prompts that ship with Cisco Unity Express. The NM supports up to 50 alternate prompts. The AIM supports up to 25 alternate prompts.	• From the CLI: See Recording an Auto-Attendant Greeting or Prompt File • This feature cannot be configured using the GUI.
	Access to a greeting management system from the telephone user interface (TUI)	Access from the TUI to a greeting management system (GMS) for recording alternate greetings and prompts. Subscribers with administrative privileges have access to the GMS.	*Cisco Unity Express Voice Mail System Quick Start Guide*
1.0	Linux-based software	Linux-based software installed on a module card that is installed in the Cisco Unified Communications Manager router. (See the Note in the "Platforms and Cisco IOS Software Images" section on page 1 regarding a UPS device.) The software includes the operating system, application software, and ordered license information.	—
	Network module card	Network module card with access to Cisco IOS software using back-to-back Ethernet and console. No external interfaces or cabling is required.	Hardware installation guide for your network module.
	Orderable license packages	Four orderable license packages. A license must be ordered for each voice-mail system. See *Release Notes for Cisco Unity Express 3.0* for the system capacities available with each license.	*Cisco Unity Express Installation and Upgrade Guide.* This feature cannot be configured using the GUI.

Table 1-1 Cisco Unity Express Features by Version (continued)

Version	Features Introduced in That Version[1]	Feature Description	Feature Information
	Spare modules	Includes factory installed software and license. Upgrades to larger capacity require purchase of a license and download of the license file.	See the *Cisco Unity Express Installation and Upgrade Guide.*
	License upgrades and downgrades	Upgrades or downgrades from one license size to another.	See the *Cisco Unity Express Installation and Upgrade Guide.*
	Two administrative interfaces	Two administrative interfaces. (See the "Administration Interfaces" section on page 1.)	• From the CLI: See Administration Interfaces • This feature cannot be configured using the GUI.
	Integrated GUI with Cisco Unified CME	An integrated administration GUI for both Cisco Unity Express and Cisco Unified CME. The integrated interface permits configuration of some Cisco Unified CME parameters, such as telephones and extensions.	*Cisco Unity Express 1.1 GUI Administrator Guide*
	Bulk provisioning of multiple sites	Bulk provisioning of multiple sites using CLI scripts not provided by Cisco Unity Express. Systems are administered individually.	*Cisco Unity Express 1.1 Guide to Writing Auto-Attendant Scripts*
	System access anywhere in the IP network	Systems accessible anywhere on the IP network. If the Cisco Unity Express installer uses TFTP, the site running the installer must be closely located to the TFTP server. All other functions use FTP, which allows the servers to be anywhere in the IP network.	—
	Manual backup and restore	Manual backup and restore using an FTP server located anywhere in the customer network.	• From the CLI: See Backing Up and Restoring Data • From the GUI: Use the **Administration > Backup/Restore** menu option and the online help.
	System reports and log files for troubleshooting	Reports are available from the Cisco Unity Express GUI screens. All troubleshooting reports and files are available using the Cisco Unity Express CLI commands.	• From the CLI: See Troubleshooting • From the GUI: Use the **Reports > System** menu option and the online help.

[1] Features that are introduced in a particular version are available in that and subsequent versions.

CHAPTER 2

Overview of Cisco Unity Express Voice Mail and Auto Attendant

The Cisco Unity Express voice-mail and auto-attendant applications work with Cisco Unified Communications Manager Express (Cisco Unified CME, formerly known as Cisco Unified CallManager Express) or Cisco Unified Communications Manager (formerly known as Cisco Unified CallManager) to provide small- and medium-sized companies with the capability to:

- Create and maintain voice mailboxes for onsite or remote telephone subscribers. The maximum number of mailboxes depends on the hardware module and license agreement purchased for Cisco Unity Express. See the "Software Licenses and Factory-Set Limits" section on page 1 for the system limits.
- Record and upload messages for callers to hear when they dial the company's telephone number and prompts to guide the callers to specific extensions or employees.

Guidelines and procedures for installing and upgrading the Cisco Unity Express software are described in the *Cisco Unity Express Installation and Upgrade Guide*.

Contents

Software Licenses and Factory-Set Limits

For information about licenses and factory-set limits for Cisco Unity Express software, see *Release Notes for Cisco Unity Express*.

Administration Interfaces

Cisco Unity Express offers three administration interfaces:

- Graphical user interface (GUI)—This user-friendly, web-based interface permits administration of all voice-mail and auto-attendant functions.

  The GUI is targeted for administrators who are familiar with web-based applications and who have little or no experience with Cisco IOS command structure. See the *Cisco Unity Express GUI Administrator Guide* for the configuration procedures using the GUI menus and screens.

- Command-line interface (CLI)—This text-based interface has the same administration and configuration capabilities as the GUI. Installation, upgrade, and troubleshooting functions are available only through the CLI commands. The administrator accesses this interface through a Telnet session to the router.

  The CLI is targeted for installers, resellers, support personnel, and others familiar with Cisco IOS command structure and routers. For them, accessing the system using the CLI may be easier than using the GUI, especially for troubleshooting, scripting, and bulk provisioning of many sites. See "Entering the Command Environment" on page 1 for the instructions to enter the CLI environment.

  The Cisco Unity Express CLI commands have a structure very similar to Cisco IOS CLI commands. However, the Cisco Unity Express CLI commands do not affect Cisco IOS configurations. After you have logged in to the Cisco Unity Express module, the command environment is no longer the Cisco IOS environment.

  Error messages in Cisco Unity Express are not always the same as error messages in the Cisco IOS environment.

- The Cisco Unity Express Programmatic Interface (PI) provides a set of well defined API and data structures which external software systems can invoke to perform configurations on the Cisco Unity Express system. The PI is supported in Cisco Unity Express 8.0 and later versions.

  The Cisco Unity Express PI is implemented as a web service. Like most web services, it uses HTTP as the communication protocol and XML documents for exchanging information between client and server. The service is based on Representational State Transfer (REST) architecture and uses JAX-RS specifications for implementation.

  The Cisco Unity Express PI provides access for configuration purpose only and does not cover the following functionality:

  - Subscriber voicemail access
  - Change notifications
  - System administration related tasks like Software Upgrade and Backup/Restore
  - Reset to factory defaults
  - Reporting

  For more information, see the *Cisco Unity Express Programmatic Interface Service Programming Guide*.

The GUI and CLI are accessible from a PC or server anywhere in the IP network. To access the GUI, use Microsoft Internet Explorer 6.0 or a later release. Cisco Unity Express does not support any other browser. To access the CLI, Telnet to the router, and then use the **service-module** command.

User Subscriber Interfaces

Cisco Unity Express offers three different interfaces for subscribers to access voicemail.

- Telephony User Interface (TUI)

  VoiceMail users can access the TUI through their telephones.

- VoiceView Express

  VoiceView Express provides a simple GUI interface on selected Cisco Unified IP phones for accessing voicemail features.

- GUI Interface

  Beginning with Cisco Unity Express 8.0, a user GUI is available for voicemail subscribers to access Cisco Unity Express voicemail. Functions available through the user GUI include:

  - Creating greetings
  - Recording the spoken name
  - Modifying the personal profile and the GDM profile
  - Adding and deleting private distribution lists
  - Selecting how to be notified when receiving a voicemail
  - Having Cisco Unity Express transfer the call to another number

Additional References

The following sections provide references related to Cisco Unity Express:

- Obtaining Documentation, Obtaining Support, and Security Guidelines, page 3
- Documents Related to Cisco Unity Express, page 3
- Standards, page 4
- MIBs, page 5
- RFCs, page 5
- Technical Assistance, page 5

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Documents Related to Cisco Unity Express

See *Cisco Unity Express Documentation, By Version* for links to documents related to Cisco Unity Express.

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIBs	MIBs Link
• CISCO-UNITY-EXPRESS-MIB • CISCO-VOICE-CONNECTIVITY-MIB • CISCO-VOICE-APPLICATIONS-OID-MIB • CISCO-PROCESS-MIB • SNMPv2-MIB • IF-MIB • IP-MIB • SYSAPPL-MIB	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFCs	Title
1869	SMTP Service Extensions
1893	Enhanced Mail System Status Codes
2045	*Multipurpose Internet Mail Extensions Part One: Format of Internet Message Bodies, RFC*
2421	Voice Profile for Internet Mail - Version 2
2821	Simple Mail Transfer Protocol
2833	RTP Payloads for DTMF Digits, Telephony Tones and Telephony Signals
3261	SIP: Session Initiation Protocol
3501	Internet Message Access Protocol - Version 4rev1

Technical Assistance

Description	Link
The Cisco Technical Support & Documentation website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport

Entering and Exiting the Command Environment

This chapter describes the procedures for entering and exiting the Cisco Unity Express command environment, where Cisco Unity Express configuration commands are executed. The following sections describe these procedures:

EXEC and Configuration Modes

The Cisco Unity Express command modes, EXEC and configuration, operate similarly to the EXEC and configuration modes for Cisco IOS CLI commands. However, Cisco Unity Express EXEC mode permits some parameters to be configured or modified, which are not allowed in Cisco IOS EXEC mode. This Cisco Unity Express capability saves the configured parameters to flash memory so that the system has some minimum information available if a catastrophic failure, such as a power outage, occurs. The description for each command in this guide indicates the command mode.

Entering the Command Environment

After the Cisco Unity Express software is installed and active, use this procedure to enter the command environment.

Prerequisites

The following information is required to enter the command environment:

- IP address of the router that contains the Cisco Unity Express module
- Username and password to log in to the router
- Slot number of the module

SUMMARY STEPS

1. Open a Telnet session.
2. **telnet** *ip-address*

3. Enter the user ID and password of the router.
4. **Choose one of the following:**

- For ISM-SRE-300-K9: **service-module ism** *slot/unit* **session**
- For SM-SRE-700-K9, SM-SRE-710-K9, SM-SRE-900-K9, and SM-SRE-910-K9: **service-module sm** *slot/unit* **session**
- For NME-CUE: **service-module integrated-service-engine** *slot/unit* **session**
- For NM-CUE-EC, NM-CUE, and AIM-CUE: **service-module service-engine** *slot/unit* **session**
- For AIM2-CUE: **service-module integrated-service-module** *slot/unit* **session**

5. (Optional) **enable**

DETAILED STEPS

	Command or Action	Purpose
Step 1	Open a Telnet session.	Use a DOS window, a secure shell, or a software emulation tool such as Reflection.
Step 2	**telnet** *ip-address* **Example:** C:\>**telnet 172.16.231.195**	Specifies the IP address of the router.
Step 3	Username: Password:	Enter your user ID and password for the router.
Step 4	Choose one of the following:	
	service-module ism *slot/unit* **session** **Example:** Router# service-module ism 0/1 session	Enters the Cisco Unity Express command environment on the ISM-SRE-300-K9. If the message “Trying *ip-address slot/port* ... Connection refused by remote host appears, enter the command **service-module ism** *slot/port* **session clear** and retry this step.
	service-module sm *slot*/**0 session** **Example:** Router# service-module sm 1/0	Enters the Cisco Unity Express command environment on the SM-SRE-700-K9, SM-SRE-710-K9, SM-SRE-900-K9, and SM-SRE-910-K9. If the message “Trying *ip-address slot/port* ... Connection refused by remote host appears, enter the command **service-module sm** *slot/port* **session clear** and retry this step.

	Command or Action	Purpose
	service-module integrated-service-engine *slot/unit* **session** **Example:** `Router(config)# service-module integrated-service-engine 2/0 session`	Enters the Cisco Unity Express command environment on the NME-CUE. If the message “`Trying` *`ip-address slot/port`* `...` `Connection refused by remote host` appears, enter the command **service-module integrated-service-engine** *slot/port* **session clear** and retry this step
	service-module service-engine *slot/unit* **session** **Example:** `Router(config)# service-module service-engine 1/0 session`	Enters the Cisco Unity Express command environment on the NM-CUE-EC, NM-CUE, or AIM-CUE. If the message “`Trying` *`ip-address slot/port`* `...` `Connection refused by remote host` appears, enter the command **service-module service-engine** *slot/port* **session clear** and retry this step.
	service-module internal-service-module *slot/unit* **session** **Example:** `Router(config)# service-module internal-service-module 0/1`	Enters the Cisco Unity Express command environment on the AIM2-CUE. If the message “`Trying` *`ip-address slot/port`* `...` `Connection refused by remote host` appears, enter the command **service-module intern al-service-module** *slot/port* **session clear** and retry this step
Step 5	**enable** **Example:** `se-10-0-0-0#` **`enable`**	(Optional) Enters Cisco Unity Express EXEC mode. You are ready to begin the configuration tasks.

Exiting the Command Environment

To leave the Cisco Unity Express command environment and return to the router command environment, return to Cisco Unity Express EXEC mode and enter the **exit** command twice.

The following example illustrates the exit procedure:

```
se-10-0-0-0# exit
se-10-0-0-0> exit
router#
```

CHAPTER 4

Configuration Tasks

This chapter lists the tasks for configuring and maintaining Cisco Unity Express and contains the following sections:

- Configuring the System Using CLI Commands, page 1
- Configuring the System Using the GUI, page 1
- Configuration Tasks, page 1
- Ongoing Tasks, page 10
- As-Needed Tasks, page 10

Configuring the System Using CLI Commands

If you will configure one or more Cisco Unity Express systems exclusively using CLI scripts, enter the command environment as described in "Entering the Command Environment" on page 1. Proceed with the scripts, using the sections in this chapter as a guideline for configuring the system components. When entering the GUI for the first time and the initialization wizard appears, choose the skip option to avoid reconfiguring the system.

Configuring the System Using the GUI

The Cisco Unity Express GUI provides the initialization wizard software tool to configure the basic system parameters and import any subscribers configured on Cisco Unified Communications Manager or Cisco Unified CME.

If you log in to the GUI web interface after installation, the initialization wizard is the first screen to appear. You cannot activate it again except by reinstalling Cisco Unity Express software. All the parameters configured through the initialization wizard are available through GUI screens and CLI commands. See "Configuring the System for the First Time," in the *Cisco Unity Express GUI Administrator Guide* for more information about the initialization wizard.

Configuration Tasks

Table 4-1 lists the initial configuration tasks, the section describing each procedure, and additional information needed for each task.

Table 4-1 Configuration Tasks

Task and Procedure Location	Additional Information Needed
1. Configuring the SIP Proxy Server Location for Cisco Unity Express, page 2	• Hostname or IP address of the SIP proxy server. • UDP or TCP port on the SIP proxy server.
2. Configuring the Call Transfer Mode, page 4	Select a transfer mode: attended, semiattended, or blind.
3. Configuring DTMF Options, page 5	Select a DTMF relay option: rtp-nte, subnotify, sip-notify, or info.
4. Configuring the MWI Notification Option, page 8	Choose an MWI notification option: outcall, sub-notify, or unsolicited.
5. Configuring the MWI Notification Option, page 8	MWI on and off extension numbers. Cisco Unity Express uses these extensions with the affected telephone extension to generate a SIP call to Cisco Unified CME, which changes the status of the telephone's MWI light.
6. Configuring Cisco Unified CME SIP Options for RFC Compliance, page 21	Cisco IOS software release running on the Cisco Unified CME platform.
7. Configuring JTAPI Parameters (Cisco Unified Communications Manager Only), page 22	• IP address or hostname for the primary, secondary, and tertiary Cisco Unified Communications Manager servers • JTAPI user ID and password from Cisco Unified Communications Manager. The password is case sensitive. These values must match the JTAPI user ID and password that were configured on Cisco Unified Communications Manager. • List of CTI ports
8. Configuring Voice Mail, page 1	• Maximum number of subscribers who can access voice mail simultaneously. This number is limited by the number of ports purchased with Cisco Unity Express. Check your license agreement and see "Recording a Prompt File" on page 29 for this maximum number. • Telephone number to access the voice-mail system.
9. Configuring the Administration via Telephone Application, page 1	Telephone number for accessing the Administration via Telephone (AvT).

Table 4-1 Configuration Tasks (continued)

Task and Procedure Location	Additional Information Needed
10. Configuring and Managing the Auto-Attendant Application, page 1	• To use your own welcome greeting, create a .wav file that contains the prerecorded welcome greeting. Upload this file to the Cisco Unity Express module so that it can be located and saved in the auto-attendant script. Alternatively, you can use the AvT to record the welcome greeting. See "Recording a Prompt File" on page 29 and "Uploading a Prompt File" on page 29 for guidelines on recording and uploading a greeting. • Number of times the auto-attendant will replay instructions to a caller before the call is disconnected. This count begins when the caller moves past the main menu and starts to hear instructions for a submenu. The main menu will play five times and then, if the caller makes no choice or incorrect choices, will transfer to the operator. • Extension number of the operator. Auto-attendant dials this extension when the caller presses the zero ("0") button. • Telephone number that the caller must dial to reach the auto-attendant. In many cases, this number is your company telephone number. • Maximum number of callers that auto-attendant can handle simultaneously. This number is limited by the number of ports purchased with Cisco Unity Express. Check your license agreement and see "Recording a Prompt File" on page 29 for this maximum number.
11. "Recording a Prompt File" on page 29	• Prerecorded prompt files in .wav format. Use the AvT to record the prompts. • Prompt filenames.
12. Configuring Auto-Attendant Scripts, page 9	• Preconfigured script files. Use the Cisco Unity Express script editor to create the files. See the *Cisco Unity Express Guide to Writing Scripts* for more information. • Script filenames.
13. Configuring SIP Triggers for the Applications, page 39	• Telephone number that invokes the application. This number must be different for voice-mail, auto-attendant, and AvT. • Maximum number of callers, or sessions, the application can handle simultaneously. The total for all applications must not exceed the maximum number of ports for the system. (See "Recording a Prompt File" on page 29 for the maximum number of ports.) The applications need not have the same maximum number; for example, voice mail might need three sessions while auto-attendant needs five sessions.

Table 4-1 Configuration Tasks (continued)

Task and Procedure Location	Additional Information Needed
14. Configuring JTAPI Triggers for the Applications (Cisco Unified Communications Manager Only), page 43	• Telephone number that invokes the application. The number cannot be the same for both voice mail and autoattendant. • Number of seconds the system must wait for a caller response before it times out and drops the call. • Language to use for the prompts. Cisco Unity Express supports multiple languages. Only one can be installed on the system. See the *Release Notes for Cisco Unity Express* for a list of available languages. • Maximum number of callers that can access the trigger simultaneously. See "Sharing Ports Among Applications and Triggers" on page 46 for guidelines on assigning this value.
15. (Optional) Configuring System-Wide Voice-Mail Parameters, page 20	• Capacity—Total amount of storage time in hours allowed for all mailboxes in the system. The factory default is the maximum allowed storage for your system. • Expiration date—Number of days a message is saved in the mailbox before the voice-mail system deletes it. The factory default value is 30 days. • Language—Language used for voice mail prompts. Cisco Unity Express supports several languages. Only one can be installed on the system. See the *Release Notes for Cisco Unity Express* for a list of available languages. • Mailbox size—Maximum number of seconds of storage for voice messages in a mailbox. The factory default value is determined by dividing the maximum storage capacity by the maximum number of mailboxes (personal plus general delivery). • Message length—Maximum number of seconds for any one stored message in a mailbox. The factory default is 60 seconds. • Recording time—Maximum amount of time for a subscriber's recorded mailbox greeting. • Operator extension—Extension of the voice-mail operator. • Destination mailbox for forwarded calls—Choose either the original called number or last redirected number where you want to store the voice message of a forwarded call.

Table 4-1 Configuration Tasks (continued)

Task and Procedure Location	Additional Information Needed
16. Adding and Modifying a User, page 1	• Username—User ID. The username must be at least 3 and no more than 32 characters. Users IDs must start with a letter. Do not use spaces in the username. • (Optional) Full name—First and last name of the subscriber. • (Optional) Group—Name of a group in which this subscriber is a member. • Extension—Phone extension for the subscriber. If you create a subscriber or group with the CLI, you may choose to provide a password and PIN. • Password—Password for this subscriber for accessing the Cisco Unity Express GUI. • PIN—Personal identification number for this subscriber for accessing the Cisco Unity Express telephone user interface (TUI).
17. Adding and Modifying a Group, page 7	EXEC mode: • Name of the group. • (Optional) Description of the group. • (Optional) Full name of the group. Configuration mode: • Name of the group. • (Optional) One or more member user IDs. • (Optional) User ID of the owner. • (Optional) Extension or telephone number of the group. • (Optional) Full E.164 telephone number of the group. The group does not need a mailbox associated with it. **Note** If a subscriber must access a general delivery mailbox (GDM), the subscriber must have a personal mailbox assigned first.
18. Planning Mailbox Configuration, page 4	• Mailbox owner. • (Optional) Mailbox size—Total number of seconds from all messages stored in a subscriber's voice mailbox. • (Optional) Message storage time—Number of days that the system saves old messages. • (Optional) Message length—Maximum number of seconds for any message stored in a voice mailbox. • (Optional) Telephone numbers for the voice-mail system, auto-attendant, and operator extension.

Table 4-1 Configuration Tasks (continued)

Task and Procedure Location	Additional Information Needed
19. (Optional) Configuring SNMP Monitoring, page 1	• SNMP community strings (passwords) that permit users to read and write SNMP MIB objects (variables). Specify whether these community strings will have read-only or read-write privileges. The system supports a maximum of 5 read-only community strings and 5 read-write community strings. Each community string may have a maximum of 15 alphanumeric characters, including letters A to Z, letters a to z, digits 0 to 9, underscore (_), and hyphen (-). • IP address and community string of the host server that will receive SNMP traps from Cisco Unity Express. If no host is defined, the system discards the trap. The system supports a maximum of 5 hosts (trap receivers). No host is considered the primary host. The system sends the SNMP notifications to all enabled hosts. • (Optional) SNMP server contact information for this managed node. • (Optional) SNMP server location information for this managed node. • Threshold values for the following activities: – Entering a login username. – Entering a password. – Entering a personal identification number (PIN) user ID. – Entering a PIN password. – Resetting a PIN.
20. (Optional) “” on page 1	• For Cisco Unified Communications Manager systems: Ensure that all phones configured to use VoiceView Express are controlled by the JTAPI user configured on Cisco Unity Express. • For Cisco Unified CME systems: Ensure that the Cisco Unified CME authentication server URL points to Cisco Unity Express. • Number of minutes a VoiceView Express session can be inactive before the system disconnects the session. • (Optional) URL for the fallback authentication server (for Cisco Unified CME systems)
21. (Optional) “Configuring Restriction Tables” on page 32	Configure restriction tables to use with the following features: • Fax • Message notification • Live reply • Nonsubscriber message delivery

Table 4-1 Configuration Tasks (continued)

Task and Procedure Location	Additional Information Needed
22. (Optional) "Configuring IMAP" on page 1	• Maximum number of simultaneous IMAP client sessions permitted by the Cisco Unity Express IMAP server. This number varies depending on the hardware platform. See the *Release Notes for Cisco Unity Express* for more information. • Number of minutes an IMAP session can be idle after which the system automatically logs out of the session. • Type of connections that are permitted. Options include SSL only, nonSSL only, or both SSL and nonSSL. The default is nonSSL only. **Note** The system must have a default security certificate and private key before SSL connections are permitted on Cisco Unity Express. Use the **show crypto key** command to display the system default certificate-key pair. If no default certificate-key pair exists, follow the procedure in "Configuring Security" on page 1. • Name of the group with the privilege to use IMAP.
23. "Configuring the Delivery of Future Messages" on page 21	Integrated Messaging is disabled by default. Enable it to use its capabilities.
24. (Optional) Configuring System-Wide Fax Parameters, page 58	Turn this feature on or off.
25. Configuring Password and PIN Parameters, page 12	• Password length and expiry time. • PIN length and expiry time.
26. (Optional) Configuring Holiday Lists, page 47	Month, day, year, and description of each holiday.
27. (Optional) Configuring Business Hours, page 52	• Schedule name The maximum length of the name is 31 alphanumeric characters, including uppercase letters A to Z, lowercase letters a to z, digits 0 to 9, underscore (_), and dash (-). The first character of the name must be a letter. If a schedule with this name does not exist, the system will create it. If the schedule already exists, any changes will modify the schedule. If the maximum number of schedules exists and you request another one, the system displays an error message. • Day of the week • Starting and ending clock times when the business is open and closed Use the 24-hour clock format for the hours. Valid minute values are 00 and 30 only. For a new schedule, specify the closed hours; the remaining hours are open because a newly created schedule has 24 hours open each day by default.

Table 4-1 Configuration Tasks (continued)

Task and Procedure Location	Additional Information Needed
28. (Optional) "Configuring Message Notification" on page 1	System-wide parameters: • User IDs or group names if a subset of subscribers or groups have access to message notification • Notification preference • Number of seconds for the connection timeout • If you want to add phone numbers to the restriction table: – Minimum and maximum number of digits in a dial-string – At least one dial-string pattern • SMTP server hostname and authentication values (user ID and password or credential string) • Permission for subscribers to log into their voice mailboxes during notification calls • Permission for subscribers to attach voice messages to e-mail messages Subscriber or group parameters for cell phones, home phones, work phones, or numeric pagers: • Phone number • Extra digits, if any • Notification preference • Days and times when notification is active E-mail parameters: • E-mail address • Status of attaching voice messages to e-mail notifications • Message text • Notification preference • Days and times when notification is active Text message parameters: • E-mail address • Message text • Notification preference • Days and times when notification is active
29. (Optional) "Configuring Live Record" on page 9	Enable the Live Record feature and configure its parameters. See page ii for legal disclaimer information about this feature.
30. (Optional) "Configuring Live Reply" on page 13	Enable the Live Reply feature and configure its parameters.

Table 4-1 Configuration Tasks (continued)

Task and Procedure Location	Additional Information Needed
31. (Optional) Configuring Network Locations, page 3	• Network location ID number—Unique ID number for each location used by the voice-mail sender to send a remote message. The maximum length of the number is 7 digits. Cisco Unity Express supports a maximum of 500 locations. • E-mail domain name—E-mail domain name or IP address for the local Cisco Unity Express system that is attached to the local voice-mail originator's extension when sending a VPIM message. The local system's e-mail domain name must be configured to receive remote voice-mail messages. • (Optional) Location name—Descriptive name of the network location. • (Optional) Abbreviated location name—Abbreviated description of the network location. • (Optional) Voice-mail system telephone number prefix—Phone number prefix that is added to a local voice-mail originator's extension to create a VPIM address. A prefix is required only if an e-mail domain services multiple locations, and extensions between the locations are not unique. The maximum length of the prefix is 15 digits. • (Optional) Length of the voice-mail system extensions. • (Optional) VPIM encoding scheme—Encoding scheme options for translating voice-mail messages at the local Cisco Unity Express system are dynamic, G.711ulaw, or G.726. • (Optional) Voice-mail spoken name capability—Enabling this functionality permits receipt of a voice-mail originator's spoken name, which is played at the beginning of the received voice-mail message.
32. (Optional) Configuring Distribution Lists, page 1	The following information is required to create a public distribution list: • List name and number • (Optional) List owner • (Optional) List description—The description can have a maximum of 64 characters. The following information is required to add members to a distribution list: • Member type (user, group, GDM, list, remote, or blind) • Member name or extension **Note** Local and remote subscribers must be previously defined on the system.

Ongoing Tasks

Perform the tasks listed in Table 4-2 on a regular basis.

Table 4-2 Ongoing Tasks

Task	Location
Back up and restore system data.	"Backing Up Files" on page 4 and "Restoring Files" on page 8
Monitor system status.	• Monitoring the System, page 1 • Monitoring Future Messages, page 6 • Monitoring Active IMAP and VoiceView Express Sessions, page 7 • Monitoring Queues, page 9 • Displaying SNMP and Management Data Activity, page 10 • Viewing System Activity Messages, page 12 • Checking AIM Compact Flash Memory Wear Activity, page 13 • Viewing Historical Reports, page 13 • Viewing Real Time Reports, page 13 • Troubleshooting, page 1

As-Needed Tasks

Perform the tasks listed in Table 4-3 on an as-needed basis.

Table 4-3 As-Needed Configuration Tasks

Task	Location
Add, display, modify, and delete voice mailboxes.	Planning Mailbox Configuration, page 4
Unlock a voice mailbox.	Unlocking a Voice Mailbox, page 16
Add, display, modify, and delete subscribers.	Adding and Modifying a User, page 1
Add, display, modify, and delete groups.	Adding and Modifying a Group, page 7
Change a subscriber's voice-mail password.	Adding and Modifying a User, page 1
Change the voice mailbox size or storage time.	Configuring System-Wide Voice-Mail Parameters, page 20
Modify the auto-attendant application properties.	Configuring and Managing the Auto-Attendant Application, page 1
Add, modify, and delete the auto-attendant prompts.	Managing Prompts, page 28
Add, modify, and delete the auto-attendant scripts.	Managing Scripts, page 26
Troubleshoot software problems.	Troubleshooting Guidelines, page 1

Tip Bookmark the Cisco Unity Express documentation home page for easy access to all the documents. Print out and have available the documentation for these Ongoing and As-Needed tasks.

CHAPTER 5

Configuring System Components

Command-line interface (CLI) commands are available to configure Cisco Unity Express system components. You enter some commands in EXEC mode and others in configuration mode.

This chapter describes how to configure the following basic Cisco Unity Express components:

- SIP parameters that Cisco Unity Express must communicate with Cisco Unified Communications Manager Express (Cisco Unified CME).
- JTAPI parameters that Cisco Unity Express must communicate with Cisco Unified Communications Manager.
- Other Cisco Unity Express system components such as Prompts, Scripts, Applications, Triggers, and so on.

All the procedures in this chapter can be implemented using either CLI commands or the graphical user interface (GUI) options. Use the CLI procedures for:

- Bulk provisioning
- Scripting
- Upgrading
- Troubleshooting systems

This chapter contains the following procedures for configuring Cisco Unity Express system components:

Configuring SIP Call Control Parameters

This section contains:

Configuring the SIP Proxy Server Location for Cisco Unity Express

The Session Initiation Protocol (SIP) proxy server resides on the router where Cisco Unified CME is installed. Cisco Unified CME can be installed on a different router from where the Cisco Unity Express hardware and software is installed. The SIP proxy server location information must be configured properly to enable all communications between Cisco Unity Express and Cisco Unified CME. The SIP proxy server also enables the message waiting indicators (MWIs) to work with the Cisco Unity Express voice-mail application.

Required Data for This Procedure

The following information is required to configure the SIP proxy server:

- Hostname or IP address of the router where the SIP proxy server resides
- UDP port of the router where the SIP proxy server resides

SUMMARY STEPS

1. **config t**
2. **ccn subsystem sip**
3. **gateway address** *ip-address*
4. **gateway port** *port-number*
5. **end**
6. **show ccn subsystem sip**

7. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**ccn subsystem sip** **Example:** `se-10-0-0-0# ccn subsystem sip`	Enters SIP configuration mode.
Step 3	**gateway address** *ip-address* **Example:** `se-10-0-0-0(config-sip)# gateway address 10.100.6.9`	Specifies the hostname or IP address of the router where the SIP proxy server resides.
Step 4	**gateway port** *port-number* **Example:** `se-10-0-0-0(config-sip)# gateway port 5060`	Specifies the UDP port number on which the SIP proxy server listens for incoming SIP messages. The default value is 5060. **Note** We strongly recommend that you do not change this port number.

Step 5	**end**
	Example:
	`se-10-0-0-0(config-sip)# end`
		Returns to privileged EXEC mode.

Step 6	**show ccn subsystem sip** **Example:** `se-10-0-0-0# show ccn subsystem sip`	Displays the SIP subsystem parameters.
Step 7	**copy running-config startup-config** **Example:** `se-10-0-0-0# copy running-config startup-config`	Copies the configuration changes to the startup configuration.

Examples

The following example illustrates the **show ccn subsystem sip** output, which displays the SIP gateway IP address and SIP port number:

```
se-10-0-0-0# show ccn subsystem sip

SIP Gateway:                            10.100.6.9
SIP Port Number:                        5060
DTMF Relay:                             sip-notify,sub-notify
MWI Notification:                       sub-notify
Transfer Mode:                          refer-consult
SIP RFC Compliance:                     Pre-RFC3261
```

```
se-10-0-0-0#
```

Configuring the Call Transfer Mode

Cisco Unity Express permits configuration of attended and semiattended call transfer modes in addition to blind transfers.

SUMMARY STEPS

1. **config t**
2. **ccn subsystem sip**
3. **transfer-mode** {**attended** | **semi-attended** | **blind refer** | **blind bye-also**]}
4. **end**
5. **show ccn subsystem sip**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	`ccn subsystem sip`
	Example:
	`se-10-0-0-0(config)# ccn subsystem sip`
		Enters SIP configuration mode.

Step 3	`transfer-mode {attended	semi-attended	blind refer	blind bye-also]}` **Example:** `se-10-0-0-0(config-sip)# transfer-mode blind refer`	Specifies the transfer mode. • **attended**—Transfers calls in attended mode using the REFER method. The transfer is completed when the destination extension answers the call. • **semi-attended**—Transfers calls in semi-attended mode using the REFER method. The transfer is completed when the destination extension is ringing. • **blind refer**—Transfers calls without consulting using the REFER method. • **blind bye-also**—Transfers calls without consulting using the BYE/ALSO method. Cisco Unity Express uses this method if the remote end does not support REFER. This is the default value.

	Command or Action	Purpose

Step 4	**end**
	Example:
	`se-10-0-0-0(config-sip)# end`
		Returns to privileged EXEC mode.

Step 5	**show ccn subsystem sip** **Example:** `se-10-0-0-0# show ccn subsystem sip`	Displays SIP configuration parameters.

Examples

The following is example output of the **show ccn subsystem sip** command.

```
se-10-0-0-0# show ccn subsystem sip

SIP Gateway:        172.19.167.208
SIP Port Number:    5060
DTMF Relay:         sip-notify rtp-nte
MWI Notification:   outcall
Transfer Mode:      blind (REFER)
SIP RFC Compliance: Pre-RFC3261
```

Configuring DTMF Options

The listed options are available for handling incoming and outgoing DTMF signals for SIP calls from Cisco Unified CME and Cisco SRST mode.

Cisco Unity Express provides the following options for transferring DTMF signals for incoming and outgoing SIP calls.

- **rtp-nte**—Uses the media path to relay incoming and outgoing DTMF signals.

  To use the **rtp-nte** option, verify that the Cisco IOS SIP gateway is configured to use RTP-NTE for SIP calls, as shown in the following example:

  ```
  dial-peer voice 1000 voip
     destination-pattern 6700
     session protocol sipv2
     session target ipv4:10.100.9.6
     dtmf-relay rtp-nte
     codec g711ulaw
     no vad
  ```

- **sub-notify**—Uses Subscribe and Notify messages to relay incoming DTMF signals to Cisco Unity Express. This option is not available for outgoing DTMF signals from Cisco Unity Express.
- **info**—Uses the Info message to relay outgoing DTMF signals from Cisco Unity Express to the Cisco IOS SIP gateway. This option is not available for incoming DTMF signals to Cisco Unity Express.
- **sip-notify**—Uses Unsolicited-Notify messages for incoming and outgoing DTMF signals.

  To use the **sip-notify** option, verify that the Cisco IOS SIP gateway is configured to use Unsolicited NOTIFY for SIP calls, as shown in the following example:

  ```
  dial-peer voice 1 voip
  ```

```
destination-pattern 6700
session protocol sipv2
session target ipv4:10.100.9.6
dtmf-relay sip-notify
codec g711ulaw
no vad
```

You can configure more than one option for transferring DTMF signals. The order in which you configure the options determines their order of preference.

Table 5-1 shows the various option combinations, the remote end capability, and the signaling option for incoming and outgoing DTMF signals.

Table 5-1 DTMF Relay Option Combinations

Cisco Unity Express Configuration	Option Supported at Remote End	Option for Incoming DTMF to Cisco Unity Express	Option for Outgoing DTMF from Cisco Unity Express
sub-notify	—	sub-notify	no DTMF
info	—	no DTMF	info
rtp-nte	rtp-nte	rtp-nte	rtp-nte
sip-notify	sip-notify	sip-notify	sip-notify
sip-notify, rtp-nte	rtp-nte, sip-notify	sip-notify[1]	sip-notify[1]
sip-notify, rtp-nte	rtp-nte	rtp-nte	rtp-nte
sip-notify, info	sip-notify	sip-notify	sip-notify
sip-notify, info	no support[2]	no DTMF	info
sip-notify, sub-notify	sip-notify	sip-notify	sip-notify
sip-notify, sub-notify	no support[2]	sub-notify	sub-notify
sip-notify, rtp-nte, info	rtp-nte	rtp-nte	rtp-nte
sip-notify, rtp-nte, info	sip-notify	sip-notify	sip-notify
sip-notify, rtp-nte, info	no support[2]	no DTMF	info
sip-notify, rtp-nte, sub-notify	rtp-nte	rtp-nte	rtp-nte
sip-notify, rtp-nte, sub-notify	sip-notify	sip-notify	sip-notify
sip-notify, rtp-nte, sub-notify	no support[2]	sub-notify	no DTMF
sub-notify, info	—	sub-notify	info
rtp-nte, sub-notify	rtp-nte	rtp-nte	rtp-nte
rtp-nte, sub-notify	no support[2]	sub-notify	no DTMF
rtp-nte, info	rtp-nte	rtp-nte	rtp-nte
rtp-nte, info	no support[2]	no DTMF	info
sip-notify, rtp-nte, sub-notify, info	sip-notify, rtp-nte	sip-notify	sip-notify

Table 5-1 DTMF Relay Option Combinations (continued)

Cisco Unity Express Configuration	Option Supported at Remote End	Option for Incoming DTMF to Cisco Unity Express	Option for Outgoing DTMF from Cisco Unity Express
sip-notify, rtp-nte, sub-notify, info	rtp-nte	rtp-nte	rtp-nte
sip-notify, rtp-nte, sub-notify, info	no support[2]	sub-notify	info

[1] For incoming call. For outgoing call, the remote end decides between rtp-nte and sip-notify.

[2] No support for rtp-nte and sip-notify.

SUMMARY STEPS

1. **config t**
2. **ccn subsystem sip**
3. **dtmf-relay** {**rtp-nte** | **sub-notify** | **info** | **sip-notify**}

   To configure more than one signal option, specify them using a single **dtmf-relay** command.
4. **end**
5. **show ccn subsystem sip**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	`ccn subsystem sip`
	Example:
	`se-10-0-0-0(config)# ccn subsystem sip`
		Enters SIP configuration mode.

	Command or Action	Purpose

Step 3	**dtmf-relay** {**rtp-nte** | **sub-notify** | **info** | **sip-notify**}
	Example:
	`se-10-0-0-0(config-sip)#` **`dtmf-relay sip-notify rtp-nte`**
		Specifies the DTMF signal handling option. Use a single **dtmf-relay** command to specify more than one DTMF option.
		• **rtp-nte**—Uses the media path to relay incoming and outgoing DTMF signals.
		Note Verify that the Cisco IOS gateway has a dial-peer configured to use **rtp-nte**.
		• **sub-notify**—Uses Subscribe and Notify messages to relay for incoming DTMF signals to Cisco Unity Express.
		• **info**—Uses the Info message to relay outgoing DTMF signals from Cisco Unity Express to the Cisco IOS SIP gateway.
		• **sip-notify**—Uses Unsolicited-Notify messages to relay incoming and outgoing DTMF signals.
		Note Verify that the Cisco IOS gateway has a dial-peer configured to use **sip-notify**.

Step 4	**end**
	Example:
	`se-10-0-0-0(config-sip)#` **`end`**
		Returns to privileged EXEC mode.

Step 5	**show ccn subsystem sip** **Example:** `se-10-0-0-0#` **`show ccn subsystem sip`**	Displays SIP configuration parameters.

Examples

The following example displays the output of the **show ccn subsystem sip** command.

```
se-10-0-0-0# show ccn subsystem sip

SIP Gateway:        172.19.167.208
SIP Port Number:    5060
DTMF Relay:         sip-notify rtp-nte
MWI Notification:   outcall
Transfer Mode:      consult (REFER)
SIP RFC Compliance: Pre-RFC3261
```

Configuring the MWI Notification Option

Cisco Unity Express expands MWI status update capability to include Cisco Unified Communications Manager and Cisco SRST mode. Three notification options are available:

- Outcall Notification (Not Available in Cisco SRST Mode), page 9
- Sub-Notify Notification, page 9
- Unsolicited Notification, page 10

From the GUI, select **Voice Mail > Message Waiting Indicators > Settings** to configure the MWI notification option.

Outcall Notification (Not Available in Cisco SRST Mode)

Only Cisco Unified CME can use the SIP **outcall** mechanism for generating MWI notifications. Outcall will not work in Cisco SRST mode.

Note If the MWI notification option is **outcall,** configure the MWI on and off extensions. See "Configuring the MWI On and Off Extensions (Not Available in Cisco SRST Mode)" on page 12.

The **outcall** option is available for backward compatibility. We recommend that you use either **sub-notify** or **unsolicited** for the MWI notification option.

To use the **outcall** option, Cisco Unified CME must configure two ephone-dns that are registered to receive MWI notifications as follows:

```
ephone-dn 30
  number 8000....
  mwi on
.
.
ephone-dn 31
  number 8001....
  mwi off
```

Note The number of dots in the above example must be equal to the extension length of the phones connected to Cisco Unified CME.

Sub-Notify Notification

Both Cisco Unified CME and Cisco Unified Communications Manager in SRST mode can use the **sub-notify** mechanism for generating MWI notifications. With this mechanism, the MWI notifications will reflect the accurate status of messages in a subscriber's voice mailbox.

After an ephone-dn is configured with the **sub-notify** option, Cisco Unified CME sends a Subscribe message to Cisco Unity Express to register the phone for MWI notifications. When a new voice message arrives in the voice mailbox for the ephone-dn, Cisco Unity Express updates the MWI status. If Cisco Unity Express does not receive the Subscribe message for the ephone-dn, Cisco Unity Express will not update the MWI status when a new message arrives.

To use the **sub-notify** option, Cisco Unified CME must configure each ephone-dn that is registered to receive MWI notifications as follows:

For Cisco IOS Releases Prior to 12.3(11)T7

```
sip-ua
.
.
   mwi-server ipv4:10.100.9.6 transport udp port 5060
   number 2010
.
ephone-dn 35
  mwi sip
```

For Cisco IOS Releases 12.3(11)T7 and Later Releases

```
sip-ua
.
.
   mwi-server ipv4:10.100.9.6 transport udp port 5060
   number 2010
.
ephone-dn 35
  mwi sip
```

For Cisco SRST Mode

```
sip-ua
.
.
   mwi-server ipv4:10.100.9.6 transport udp port 5060
   number 2010
.
call-manager-fallback.
  mwi relay
```

Note The SIP server IP address used in these commands must be the IP address of Cisco Unity Express. In the examples shown above, this is 10.100.9.6.

Unsolicited Notification

Both Cisco Unified CME and Cisco Unified Communications Manager in SRST mode can use the **unsolicited** mechanism for generating MWI notifications. With this mechanism, the MWI notifications will reflect the accurate status of messages in a subscriber's voice mailbox.

The **unsolicited** option does not require Cisco Unified CME to send a subscription request for each ephone-dn to Cisco Unity Express for MWI notifications. Cisco Unity Express sends Notify messages to Cisco Unified CME whenever the voice mailbox for any ephone-dn receives a new message. In this way, the MWI status reflects the current voice mailbox message status.

To use the **unsolicited** option, Cisco Unified CME must configure each ephone-dn that is registered to receive MWI notifications as follows:

For Cisco IOS Releases Prior to 12.3(11)T7

```
telephony-service
.
.
   mwi sip-server 10.100.9.6 transport udp port 5060 unsolicited
   number 2010
.
ephone-dn 35
  mwi sip
```

For Cisco IOS Release 12.3(11)T7 and Later Releases

```
sip-ua
.
.
   mwi-server ipv4:10.100.9.6 transport udp port 5060 unsolicited
   number 2010
.
```

```
ephone-dn 35
  mwi sip

For Cisco SRST Mode
sip-ua
.
.
   mwi-server ipv4:10.100.9.6 transport udp port 5060 unsolicited
   number 2010
.
call-manager-fallback.
  mwi relay
```

Note The SIP server IP address used in these commands must be the IP address of Cisco Unity Express. In the examples shown above, this is 10.100.9.6.

SUMMARY STEPS

1. **config t**
2. **ccn subsystem sip**
3. **mwi sip** {**outcall** | **sub-notify** | **unsolicited**}
4. **end**
5. **show ccn subsystem sip**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	`ccn subsystem sip`
	Example:
	`se-10-0-0-0(config)# ccn subsystem sip`
		Enters SIP configuration mode.

Step 3	`mwi sip {outcall	sub-notify	unsolicited}` **Example:** `se-10-0-0-0(config-sip)# mwi sip sub-notify`	Specifies the MWI notification methods for SIP calls. The default is **outcall**. • **outcall** —Sends MWI notifications using SIP outcall. • **sub-notify**—Sends MWI notifications using SIP Notify. • **unsolicited**—Sends MWI notifications using SIP Unsolicited Notify.

	Command or Action	Purpose

Step 4	**end**
	Example:
	`se-10-0-0-0(config-sip)# end`
		Returns to privileged EXEC mode.

Step 5	**show ccn subsystem sip** **Example:** `se-10-0-0-0# show ccn subsystem sip`	Displays SIP configuration parameters.

Examples

The following example displays the output of the **show ccn subsystem sip** command.

```
se-10-0-0-0# show ccn subsystem sip

SIP Gateway:          172.19.167.208
SIP Port Number:      5060
DTMF Relay:           sip-notify, sub-notify
MWI Notification:     sub-notify
Transfer Mode:        consult (REFER)
```

Configuring the MWI On and Off Extensions (Not Available in Cisco SRST Mode)

Cisco Unity Express uses the MWI on and off extensions with the affected telephone extension to generate a SIP call to Cisco Unified CME, which changes the status of the telephone's MWI light.

This configuration is required only if the MWI notification option is configured as **outcall**. (See the earlier section "Configuring the MWI Notification Option" on page 8.)

Prerequisites

Verify that the MWI on and off extensions are configured on Cisco Unified CME; otherwise, the MWI light will not work.

Required Data for This Procedure

The following information is required to configure the MWI on and off extensions:

- Extension number dedicated to the MWI on extension
- Extension number dedicated to the MWI off extension

SUMMARY STEPS

1. **config t**
2. **ccn application ciscomwiapplication**
3. **parameter strMWI_ON_DN** *on-extension*
4. **parameter strMWI_OFF_DN** *off-extension*

5. **end**
6. **copy running-config startup-config**

DETAILED STEPS

	Command of Action	Purpose
Step 1	**config t** **Example:** se-10-0-0-0# config t	Enters configuration mode.
Step 2	**ccn application ciscomwiapplication** **Example:** se-10-0-0-0(config)# **ccn application ciscomwiapplication**	Enters configuration mode for the MWI application.
Step 3	**parameter strMWI_ON_DN** *on-extension* **Example:** se-10-0-0-0(config-application)# **parameter strMWI_ON_DN 8000**	Assigns the *on-extension* value as the MWI on extension. Use the same on extension as configured on Cisco Unified CME.
Step 4	**parameter strMWI_OFF_DN** *off-extension* **Example:** se-10-0-0-0(config-application)# **parameter strMWI_OFF_DN 8001**	Assigns the *off-extension* value as the MWI off extension. Use the same off extension as configured on Cisco Unified CME.
Step 5	**end** **Example:** se-10-0-0-0(config-application)# end	Returns to privileged EXEC mode.
Step 6	**copy running-config startup-config** **Example:** se-10-0-0-0# **copy running-config startup-config**	Copies the configuration changes to the startup configuration.

Configuring the Inclusion of Envelope Information in SIP MWI Notifications

To determine whether envelope information is included in SIP MWI notifications, use the **mwi envelope-info** command.

Enabling the inclusion of envelope information in SIP MWI notifications does not effect whether Cisco Unity Express accepts MWI subscriptions that request envelope information. It only determines whether envelope information is not included in SIP MWI notifications and it effects only the content of MWI messages generated by Cisco Unity Express. Disabling the inclusion of envelope information does not terminate existing MWI subscriptions. After it is enabled, subsequent MWI notifications include envelope information for any existing MWI subscription that requested with envelope information

Prerequisites

- Cisco Unity Express 3.2 or a later version
- The **mwi envelope-info** command is relevant only when the **mwi sip sub-notify** command is used. For more information about the **mwi sip sub-notify** command, see the earlier section "Configuring the MWI Notification Option" on page 8.)

SUMMARY STEPS

1. **config t**
2. **ccn subsystem sip**
3. **mwi envelope-info**
4. **end**
5. **copy running-config startup-config**

DETAILED STEPS

	Command of Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`ccn subsystem sip`**
	Example:
	`se-10-0-0-0(config)#` **`ccn subsystem sip`**
		Enters SIP configuration mode.

Step 3	**`mwi envelope-info`**
	Example:
	`se-10-0-0-0(config-sip)#` **`mwi envelope-info`**
		Enables the inclusion of envelope information in SIP MWI notifications.

Step 4	**`end`**
	Example:
	`se-10-0-0-0(config-sip)# end`
		Returns to privileged EXEC mode.

Step 5	**`copy running-config startup-config`**
	Example:
	`se-10-0-0-0#` **`copy running-config startup-config`**
		Copies the configuration changes to the startup configuration.

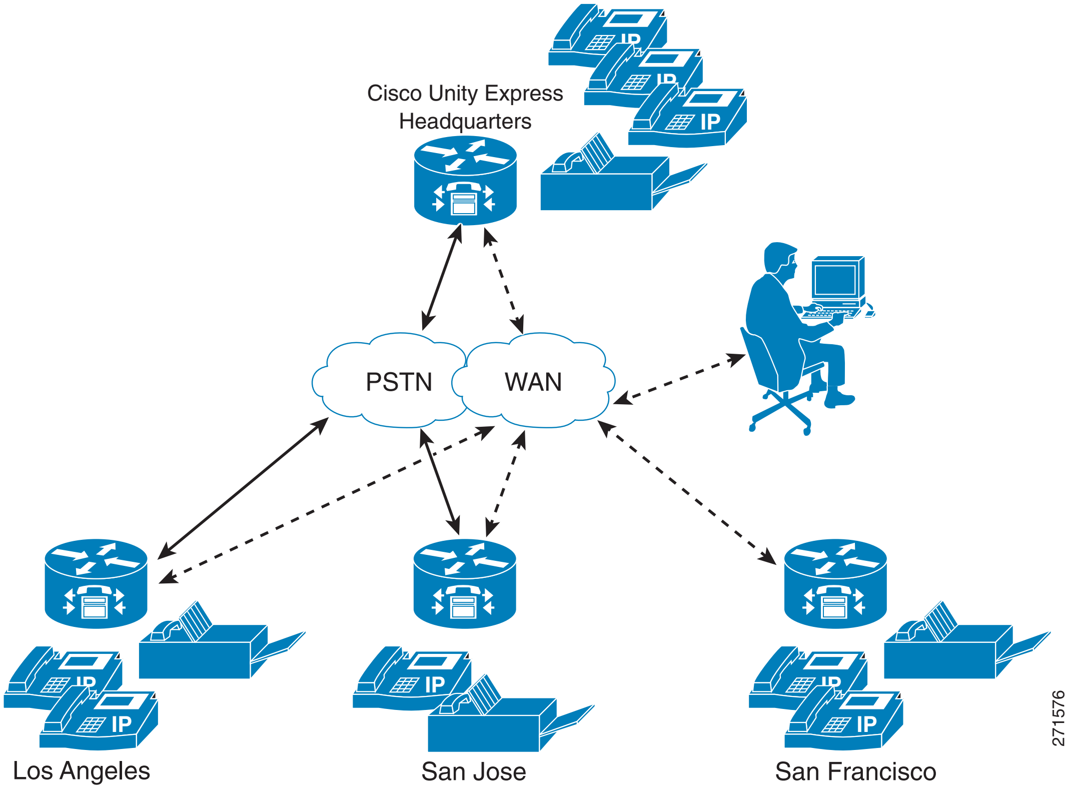
Configuring Centralized Cisco Unity Express

Available in Cisco Unity Express 3.2 and later versions, the centralization feature enables the Cisco Unity Express NME or Cisco Unity Express SM-SRE-700-K9 to interoperate with up to ten Cisco Unified CME systems.

Note The Cisco Unity Express AIM-CUE/AIM2-CUE, NM-CUE, NM-CUE-EC and ISM-SRE-300-K9 modules support only one Cisco Unified CME system.

Geographically dispersed Cisco Unified CME systems can be connected to Cisco Unity Express across a WAN link. Cisco Unity Express can be co-located with one of these Cisco Unified CME systems, although it is not required.

Figure 5-1 Centralized Cisco Unity Express Deployment Topology



To interconnect more than ten Cisco Unified CME systems, you can use Cisco Unified Messaging Gateway to interconnect multiple Cisco Unity, Cisco Unity Express, and third party messaging systems.

Note Cisco Unity Express does not support importing and/or managing Cisco Unified CME Extension Mobility (EM) users, only ephone users.

To receive the greatest benefit from the centralization feature, you must configure a single central Cisco Unified CME gateway to manage the company's dial-plan. This central Cisco Unified CME gateway is called the "local" site and is a predefined site on the system. The local site cannot be deleted.

Cisco Unity Express uses one SIP gateway for all outgoing calls and faxes. This SIP gateway must be aware of the company's dial-plan and be capable of routing calls from Cisco Unity Express to any Cisco Unified CME in the network. This gateway is configured independently of the sites, but by default, it routes to the Cisco Unified CME at the local site.

If you plan to use Outcall or Unsolicited Notify for MWI, the MWI relay must be enabled on the central (local) Cisco Unified CME and the other Cisco Unified CME routers must subscribe to this one. The central one will keep track of which numbers are defined where and pass on the MWI messages accordingly.

If you plan to use Subscribe-Notify for MWI, then the individual gateways must use Cisco Unity Express as their MWI server.

Note Cisco Unity Express does not support automatic MWI synchronization if the WAN link between Cisco Unity Express and Cisco Unified CME is disrupted. You must manually synchronize the MWI if it is out of synch.

The detailed MWI relay design guide, the MWI Relay section of the Cisco Unified Communications Manager Express Solution Reference Network Design Guide, is located at http://www.cisco.com/en/US/docs/voice_ip_comm/cucme/srnd/design/guide/cmesrnd.html.

The commands listed in the following are not available when Cisco Unity Express is working in Cisco Unified Communications Manager mode.

The following instructions describe how t o provision Cisco Unified CME sites:

- Defining a Cisco Unified CME Site (Site Provisioning), page 16
- Deleting a Cisco Unified CME Site, page 18

Note The following procedures replace the following EXEC mode command found in Cisco Unity Express 3.1 and earlier versions, whose purpose was to provision the single Cisco Unified CME it supported:
web admin cme hostname [hostname] username [username] password [password].
Although this command has not been deprecated, when you have multiple Cisco Unified CME systems, this command will apply only to the central (local) site.

Defining a Cisco Unified CME Site (Site Provisioning)

Prerequisites

Cisco Unity Express 3.2 or a later version

SUMMARY STEPS

1. config t
2. **site name** [*site-name* | **local**]
3. **site-hostname** *hostname*
4. **description** "*text*"
5. **web username** *username* **password** *password*
6. **web credentials hidden** *username-password-hash*
7. **xml username** *username* **password** *password*
8. **xml credentials hidden** *username-password-hash*
9. **exit**

10. **username** *username* **site** *site-name*
11. end
12. **show site** [*site-name*]
13. show users site [site-name]

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`site name`** *`[site-name`*`|local]`
	Example:
	`se-10-0-0-0(config)# site name local`
		Creates a Cisco Unified CME site:
		site-name—The syntax for the site name is the same as the username, containing letters, numbers, hyphens, and/or dots, maximum 32 characters.
		local—Name of the central site.

Step 3	**`site-hostname`** *`hostname`*
	Example:
	`se-10-0-0-0(config-site)# site-hostname 192.0.2.13`
		Sets the DNS hostname or IP address of the Cisco Unified CME site.

Step 4	**`description “`***`text”`*
	Example:
	`se-10-0-0-0(config-site)# description “San Jose HQ”`
		Configures a description for the site:
		text—Description for a specific site. The description can have a maximum of 64 characters and must be bracketed by quotes.

Step 5	**`web username`** *`username`* **`password`** *`password`*
	Example:
	`se-10-0-0-0(config-site)# web username admin password pass18`
		Configures the Web username and Web password for the site:
		username—Web username for the site.
		password—Web password for the site.

Step 6	**`web credentials hidden`** *`username-password-hash`*
	Example:
	`se-10-0-0-0(config-site)# web credentials hidden "GixGRq8cUmGIZDg9c8oX9EnfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmP"`
		Configures the hidden Web credentials for the site:
		username-password-hash—Encrypted credentials for the Web username and password for the site.

Step 7	**`xml username`** *`username`* **`password`** *`password`*
	Example:
	`se-10-0-0-0(config-site)# xml username user42 password password42`
		Configures the XML username and Web password for the site:
		username—Web username for the site.
		password—Web password for the site.

	Command or Action	Purpose

Step 8	**`xml credentials hidden`** *`username-password-hash`*
	Example:
	`se-10-0-0-0(config-site)# xml credentials hidden "GixGRq8cUmFqrOHVxftjAknfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmP"`
		Configures the hidden XML credentials for the site:
		username-password-hash—Encrypted credentials for the Web username and password for the site.

Step 9	exit **Example:** `se-10-0-0-0(config-site)# exit`	Leaves site-configuration mode and returns to configuration mode.

Step 10	**`username`** *`username`* **`site`** *`site-name`*
	Example:
	`se-10-0-0-0(config)# username jcwhite site sfo`
		Configures the site for the specified user. If you enter an incorrect username or site name, you get an error message.
		username—Name of the user associated with the site.
		sitename—Name of the site with which user is associated.

Step 11	`end`
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Step 12	**Example:show site** [*site-name*] `se-10-0-0-0# show site local`	(Optional) Displays information about a site: *site-name*—Name of the site for which to display information. If no site name is specified, information is shown for all sites.
Step 13	**Example:show users site [site-name]** `se-10-0-0-0# show users site local`	(Optional) Displays the users associated with a site: *site-name*—Name of the site for which to display users.

Deleting a Cisco Unified CME Site

The following configuration mode command deletes a site. You cannot delete the local site.

no site name site-name

The syntax for the site name is the same as the username, containing letters, numbers, hyphens, and/or dots, maximum 32 characters.

Example

The following example illustrates some of the configurations described above.

```
se-10-0-0-0# config t
Enter configuration commands, one per line.  End with CNTL/Z.
se-10-0-0-0(config)# site name Montreal
se-10-0-0-0(config-site)# site-hostname 192.0.2.13
```

```
se-10-0-0-0(config-site)# description HQ_Rue_St-Jacques
se-10-0-0-0(config-site)# web username admin password pass18

se-10-0-0-0(config-site)# xml username admin password pass24
se-10-0-0-0(config-site)# end
se-10-0-0-0# show site Montreal

Name         : Montreal
Description  : HQ_Rue_St-Jacques
Hostname     : 192.0.2.13
Web Username : admin
XML Username : admin

se-10-0-0-0# show users site local
USERID                           SITE
aesop                            local
cjwhite                          local
huiwa                            local
jmoy                             local
keling                           local
user1                            local
user12                           local
user13                           local
user14                           local
user15                           local
user16                           local

se-10-0-0-0#
```

Configuring FAX Support for Centralized Cisco Unity Express

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. config t
2. **fax gateway inbound address** {*ip-address* | *hostname*}
3. **fax print** *E164-number* **site** *sitename*
4. end
5. show fax configuration

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`fax gateway inbound address`** {*`ip-address`* | *`hostname`*} **Example:** `se-10-0-0-0(config)# fax gateway inbound address site8`	Configures an inbound fax gateway: *ip-address*—IP address of the inbound fax gateway. *hostname*—DNS hostname of the inbound fax gateway.

Step 3	**`fax print`** *`E164-number`* **`site`** *`sitename`*
	Example:
	`se-10-0-0-0(config)# fax print 555-0100 site site8`
		Configures the site's fax number used to print faxes:
		E164-number—Site's fax number.
		sitename—(Optional)Hostname of the site for which to configure fax printing. If no sitename is provided, the local site is configured.

Step 4	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Step 5	**`show fax configuration`**
	Example:
	`se-10-0-0-0# show fax configuration`
		(Optional) Displays the fax configuration.

Examples

The following example configures the inbound fax gateway IP address:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# fax gateway inbound address 172.16.20.50
se-10-0-0-0(config)# end
```

The following example sets the site's fax number to 555-0112:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# fax print 5550112 site site8
se-10-0-0-0(config)# end
```

The following is sample output for the **show fax configuration** command if only one site is configured:

```
se-10-0-0-0# show fax configuration

Outbound Fax Gateway:          172.16.50.38
Inbound Fax Gateway:           aesopits.aesop.com
Fax Printing Number:           1111
```

The following is sample output for the **show fax configuration** command if more than one site is configured:

```
se-10-0-0-0# show fax configuration
```

```
Outbound Fax Gateway:          172.16.50.38
Inbound Fax Gateway(s):          1.100.50.39, 1.100.60.98, 1.100.50.1
      Site           Fax Printing Number
      Local        6111
      San-jose    7854
```

Configuring NonSubscriber Distribution Lists for Centralized Cisco Unity Express

To configure NonSubscriber Distribution Lists for Centralized Cisco Unity Express, see Configuring Public Distribution Lists, page 5.

Configuring Cisco Unified CME SIP Options for RFC Compliance

Cisco Unity Express provides the **protocol** command to ensure compatibility with all Cisco IOS releases. Cisco IOS Release 12.4(2)T and earlier releases are not RFC 3261 compliant. The lack of compliance causes the Cisco Unity Express software not to interoperate properly with those older Cisco IOS releases when sip-notify or sub-notify are used for DTMF.

Required Data for This Procedure

The release number of the Cisco IOS software running on your call control platform.

SUMMARY STEPS

1. **config t**
2. **ccn subsystem sip**
3. **protocol** {**pre-rfc3261** | **rfc3261**}
4. **end**
5. **show ccn subsystem sip**

DETAILED STEPS

	Command of Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	`ccn subsystem sip`
	Example:
	`se-10-0-0-0(config-sip)# ccn subsystem sip`
		Enters configuration mode for the SIP subsystem.

	Command of Action	Purpose

Step 3	**protocol** {**pre-rfc3261** | **rfc3261**}
	Example:
	`se-10-0-0-0(config-sip)# protocol rfc3261`
		Assigns the protocol type for RFC 3261 compatibility.
		• **pre-rfc3261**—Use this option if your call control platform uses a Cisco IOS release prior to 12.4(2)T. This is the default value.
		• **rfc3261**—Use this option if your call control platform uses Cisco IOS Release 12.4(2)T or a later release.

Step 4	**end**
	Example:
	`se-10-0-0-0(config-sip)# end`
		Returns to privileged EXEC mode.

Step 5	**show ccn subsystem sip** **Example:** `se-10-0-0-0# show ccn subsystem sip`	Displays the configured SIP subsystem parameters.

Example

The following example sets the SIP option to RFC 3261 for call platforms using Cisco IOS Release 12.4(2)T or a later release.

```
se-10-0-0-0# config t
se-10-0-0-0(config)# ccn subsystem sip
se-10-0-0-0(config-sip)# protocol rfc3261
se-10-0-0-0(config-sip)# end
se-10-0-0-0#
```

Following is example output of the **show ccn subsystem sip** command.

```
se-10-0-0-0# show ccn subsystem sip
SIP Gateway:                              10.10.5.1
SIP Port Number:                          5060
DTMF Relay:                               sip-notify,sub-notify
MWI Notification:                         sub-notify
Transfer Mode:                            refer-consult
SIP RFC Compliance:                       RFC3261
```

Configuring JTAPI Parameters (Cisco Unified Communications Manager Only)

Use this procedure to configure the parameters that Cisco Unity Express must communicate with Cisco Unified Communications Manager. These parameters include:

- Up to three Cisco Unified Communications Manager servers
- JTAPI user ID and password
- JTAPI CTI ports that are configured on Cisco Unified Communications Manager and that are associated with the Cisco Unified Communications Manager JTAPI user
- Optional separate CTI port to use for MWI

Note To configure CTI ports for MWI, the Cisco Unified Communications Manager must have a CTI port that is assigned the DN you specify when you configure the CTI port, and the DN must be under the control of Cisco Unity Express JTAPI application user.

If an MWI port is configured on Cisco Unity Express but the DN is not in service, or Cisco Unity Express cannot register the port, no notifications are generated. If no MWI port is configured, Cisco Unity Express uses one of the CTI ports configured with the **ctiports** command.

Cisco Unified Communications Manager and Cisco Unity Express Version Compatibility

Depending on the version, Cisco Unity Express can be configured to work with different versions of Cisco Unified Communications Manager. For more information see the *Cisco Unity Express Compatibility Matrix*.

The following scenarios apply when installing Cisco Unity Express with a different version of Cisco Unified Communications Manager, or upgrading the Cisco Unified Communications Manager version:

- By default, each version of Cisco Unity Express is set up to work with a specific version of Cisco Unified Communications Manager. Once you configure the IP Address or Hostname of the Cisco Unified Communications Manager, you must reload the Cisco Unity Express module for the configuration to take effect. After this reload, Cisco Unity Express automatically reloads again if the configured Cisco Unified Communications Manager version is different from the supported default version.
- If the Cisco Unified Communications Manager server being used by Cisco Unity Express is upgraded, Cisco Unity Express reloads and updates its system files to work with the new version of Cisco Unified Communications Manager. No further action from you is required.

Prerequisites

To use a separate CTI port for MWI, you must have 3.2 or later releases.

Required Data for This Procedure

The following information is required to configure the JTAPI parameters:

- IP address or hostname for the primary, secondary, and tertiary Cisco Unified Communications Manager servers
- JTAPI user ID and password from Cisco Unified Communications Manager. The password is case sensitive. These values must match the JTAPI user ID and password that were configured on Cisco Unified Communications Manager.
- List of CTI ports
- To use a separate CTI port for MWI, a list of DNs that are assigned on Cisco Unified Communications Manager and are under the control of Cisco Unity Express JTAPI application user.

Note If you are using Cisco Unified Communications Manager 5.0 or a later version, verify that the AXL service is active. To do this, go to the Cisco Unified Communications Manager serviceability website, click on **Tools > Service Activation**. Look for Cisco AXL Web service.

SUMMARY STEPS

1. **config t**
2. **ccn subsystem jtapi**
3. **ccm-manager address** *{primary-server-ip-address* | *primary-server-hostname}* {*secondary-server-ip-address* | *secondary-server-hostname*} {*tertiary-server-ip-address* | *tertiary-server-hostname*}
4. **ccm-manager username** *jtapi-user-id* **password** *jtapi-user-password*
5. **ctiport** *cti-port-number*
6. **mwiport** *dn-number*
7. **redirect-css cti-port** {**ccm-default** | **calling-party** | **redirecting-party**}
8. **redirect-css route-point** {**ccm-default** | **calling-party** | **redirecting-party**}
9. **end**
10. **show ccn subsystem jtapi**
11. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** se-10-0-0-0# **config t**	Enters configuration mode.
Step 2	**ccn subsystem jtapi** **Example:** se-10-0-0-0(config)# **ccn subsystem jtapi**	Enters JTAPI configuration mode.
Step 3	**ccm-manager address** *{primary-server-ip-address* | *primary-server-hostname}* {*secondary-server-ip-address* | *secondary-server-hostname*} {*tertiary-server-ip-address* | *tertiary-server-hostname*} **Example:** se-10-0-0-0(config-jtapi)# **ccm-manager address 10.100.10.120** se-10-0-0-0(config-jtapi)# **ccm-manager address 10.100.10.120 10.120.10.120 10.130.10.120**	Specifies up to three Cisco Unified Communications Manager servers. Enter the server IP addresses or hostnames on one command line or on separate command lines. If entered on separate lines, the servers are assigned in order as primary, secondary, and tertiary servers. **Note** Restart the system for these changes to be effective.

	Command or Action	Purpose
Step 4	**ccm-manager username** *jtapi-user-id* **password** *jtapi-user-password* **Example:** se-10-0-0-0(config-jtapi)# **ccm-manager username jtapiuser password myjtapi**	Specifies the JTAPI user ID and password. The password is case sensitive. These values must match the JTAPI user ID and password that were configured on Cisco Unified Communications Manager. **Note** Restart the system for these changes to be effective.
Step 5	**ctiport** *cti-port1 cti-port2 cti-port3 cti-port4...* **Example:** se-10-0-0-0(config-jtapi)# **ctiport 7008** se-10-0-0-0(config-jtapi)# **ctiport 7009** se-10-0-0-0(config-jtapi)# **ctiport 7010** se-10-0-0-0(config-jtapi)# **ctiport 7011** se-10-0-0-0(config-jtapi)# **ctiport 6001 6002 6003 6004 6005 6006 6007 6008**	Specifies the JTAPI CTI ports that are configured on Cisco Unified Communications Manager and that are associated with the Cisco Unified Communications Manager JTAPI user. Repeat this command to enter more than one port number or enter the ports on one line. You can specify up to the maximum number of ports supported for each module type. For information on the number of ports supported, see the *Release Notes for Cisco Unity Express*.
Step 6	**mwiport** *dn-number* **Example:** se-10-0-0-0(config-jtapi)# **mwiport 44**	(Optional) Configures a separate CTI port to use for MWI. The DN must be different from those used by any of the CTI ports (as configured using the **ctiport** command).
Step 7	**redirect-css cti-port** {**ccm-default** | **calling-party** | **redirecting-party**} **Example:** se-10-0-0-0(config-jtapi)# **redirect-css cti-port redirecting-party**	(Optional) Specifies the calling search space used to redirect calls from CTI ports to elsewhere. • **ccm-default** — Redirect without Cisco Unity Express specifying a calling search space. • **calling-party** — Use the original calling party's calling search space to redirect. • **redirecting-party** — Use the redirecting party's calling search space to redirect.
Step 8	**redirect-css route-point** {**ccm-default** | **calling-party** | **redirecting-party**} **Example:** se-10-0-0-0(config-jtapi)# **redirect-css cti-port calling-party**	(Optional) Specifies the calling search space used to redirect calls from route points to CTI ports. • **ccm-default** — Redirect without Cisco Unity Express specifying a calling search space. • **calling-party** — Use the original calling party's calling search space to redirect. • **redirecting-party** — Use the redirecting party's calling search space to redirect.
Step 9	**end** **Example:** se-10-0-0-0(config-jtapi)# end	Returns to privileged EXEC mode.

	Command or Action	Purpose
Step 10	**show ccn subsystem jtapi** **Example:** `se-10-0-0-0#` **`show ccn subsystem jtapi`**	Displays configured JTAPI parameters.
Step 11	**copy running-config startup-config** **Example:** `se-10-0-0-0#` **`copy running-config startup-config`**	Copies the configuration changes to the startup configuration.

Examples

Following is example output of the **show ccn subsystem jtapi** command:

```
se-10-0-0-0# show ccn subsystem jtapi

Cisco Call Manager:                      10.100.10.120
CCM JTAPI Username:                      jtapiuser
CCM JTAPI Password:                      *****
Call Control Group 1 CTI ports:          7008,7009,7010,7011
Call Control Group 1 MWI port:           4210
CSS for redirects from route points:     ccm-default
CSS for redirects from CTI ports:        redirecting-party
```

Managing Scripts

Cisco Unity Express provides you with building blocks (known as Steps) through its Cisco Unity Express Editor Software, which can be used to create customized call-flows for various applications such as auto-attendant or IVR applications. These call flows can be saved as AEF files (known as scripts).

Cisco Unity Express ships with some internal scripts, which are known as system scripts. These system scripts cannot be downloaded, modified or deleted. The number of custom scripts supported depends on the hardware module and the release. For more information, see the the *Release Notes for Cisco Unity Express.*

Customizing scripts involves the following procedures:

- Creating a Script File, page 26
- Uploading a Script File, page 27
- Displaying the List of Existing Scripts, page 27
- (Optional) Downloading a Script File, page 28
- (Optional) Deleting a Script File, page 28

Creating a Script File

To create a script file, use the Cisco Unity Express Editor software. See to the *Cisco Unity Express Guide to Writing Auto-Attendant Scripts* for guidelines and procedures for creating a script file.

The file cannot be larger than 256 KB. Starting with Cisco Unity Express 3.1, script files can also be created using Editor Express. Editor Express can be accessed using the GUI option **System > Scripts > New**.

Note Cisco Unity Express Editor Express provides only a subset of the functionality that is available the Cisco Unity Express Script Editor. Use Cisco Unity Express Editor Express for simple call-flow customizations only.

After creating the script, use the GUI or Cisco Unity Express **ccn copy** command to upload the file to the Cisco Unity Express module. See the next section, "Uploading a Script File, page 27," for the upload procedure.

Note If you create your script using Cisco Unity Express Editor Express, you do not need to upload because it is directly saved on the Cisco Unity Express module.

Uploading a Script File

After creating the AEF file, upload the file using the **ccn copy url** command in Cisco Unity Express EXEC mode:

ccn copy url ftp://*source-ip-address*/script-filename.aef script script-filename.aef [username username password password]

Example:

```
se-10-0-0-0# ccn copy url ftp://10.100.10.123/AVTscript.aef script AVTscript.aef
se-10-0-0-0# ccn copy url http://www.server.com/AVTscript.aef script AVTscript.aef
```

This command is equivalent to using the GUI option **Voice Mail > Scripts** and selecting **Upload**.

An error message appears if you try to upload more than the maximum number of scripts allowed on your Cisco Unity Express module.

Displaying the List of Existing Scripts

To displays details of the script files existing on the module, use the following command in Cisco Unity Express EXEC mode:

show ccn scripts

Example:

```
se-10-0-0-0# show ccn scripts

Name:                         setmwi.aef
Script type:                  aa
Create Date:                  Wed May 30 19:49:05 PDT 2007
Last Modified Date:           Wed May 30 19:49:05 PDT 2007
Length in Bytes:              27768

Name:                         xfermailbox.aef
Script type:                  aa
```

```
Create Date:                 Wed May 30 19:49:14 PDT 2007
Last Modified Date:          Wed May 30 19:49:14 PDT 2007
Length in Bytes:             7579

Name:                        aal.aef
Script type:                 aa
Create Date:                 Thu May 31 22:16:33 PDT 2007
Last Modified Date:          Thu May 31 22:16:33 PDT 2007
Length in Bytes:             10035
```

Downloading a Script File

Scripts can be copied from the auto-attendant and stored on another server or PC.

To download or copy a script file, use the **ccn copy script** command in Cisco Unity Express EXEC mode:

ccn copy script *script-filename* **url ftp://***destination-ip-address***/***script-filename*

Example:

```
se-10-0-0-0# ccn copy script AVTscript.aef url ftp://10.100.10.123/AVTscript.aef
```

Deleting a Script File

To delete an auto-attendant script file from Cisco Unity Express, use the **ccn delete** command in Cisco Unity Express EXEC mode:

ccn delete script *script-filename*

Example:

```
se-10-0-0-0# ccn delete script AVTscript.aef
Are you sure you want to delete this script? (y/n)
```

Managing Prompts

Cisco Unity Express supports customized prompt files. See the *Release Notes for Cisco Unity Express* for your release for the number of customized prompts supported on your hardware module.

Customizing prompts requires the following procedures:

- Recording a Prompt File, page 29 (required)
- Uploading a Prompt File, page 29 (required)
- Downloading a Prompt File, page 30 (optional)
- Renaming a Prompt File, page 30(optional)
- Deleting a Prompt File, page 30 (optional)
- Rerecording a Prompt File, page 31 (optional)

Recording a Prompt File

Two methods are available to create prompt files:

- Create a wav file with the following format: G.711 u-law, 8 kHz, 8 bit, Mono. The file cannot be larger than 1 MB (about 2 minutes). After recording the wav file, use the GUI or Cisco Unity Express CLI **ccn copy url** command to copy or upload the file to the Cisco Unity Express module. See the next section, "Uploading a Prompt File," for the upload procedure.
- Cisco Unity Express provides an in-built application called Administration via Telephone (AvT), which lets you record customized prompt files directly on the module using a telephone. For details on how to configure and use AvT, see the chapter Configuring the Administration via Telephone Application, page 1.

  We recommend using the AvT on the TUI to record greetings and prompts because the AvT provides higher sound quality compared to .wav files recorded using other methods.

Uploading a Prompt File

After recording the .wav prompt file, upload the file using the **ccn copy url** command in Cisco Unity Express EXEC mode:

ccn copy url *source-ip-address* **prompt** *prompt-filename* [**language** *xx_YY*] [**username** *name* **password** *password*]

where *prompt-filename* is the file to be uploaded, *xx_YY* is the language of the prompt file, *name* is the FTP server login ID, and *password* is the FTP server password.

The optional language parameter lets you specify the language directory in which you want the prompt to be uploaded. An error message appears if the language specified in the command is not installed on the module. If the language parameter is omitted in this CLI command, the prompt is uploaded to the default system language directory.

Example:

```
se-10-0-0-0# ccn copy url ftp://10.100.10.123/AAprompt1.wav prompt AAprompt1.wav
se-10-0-0-0# ccn copy url http://www.server.com/AAgreeting.wav prompt AAgreeting.wav
```

This command is equivalent to using the GUI option **Voice Mail > Prompts** and selecting **Upload**.

An error message appears if you try to upload more than the maximum number of prompts allowed on your Cisco Unity Express module.

Displaying Existing Prompt File lists

To display details of the prompt files existing on the module, use the following command in Cisco Unity Express EXEC mode:

show ccn prompts [language *xx_YY*]

The optional language parameter lets you specify the language directory from which the prompts will be listed. If the language parameter is omitted in this CLI command, then prompts from all language directories are listed.

Example:
```
se-10-0-0-0# show ccn prompts

Name: AAWelcome.wav
Language: en_US
Last Modified Date: Tue May 29 22:41:44 PDT 2007
Length in Bytes: 15860

Name: AABusinessClosed.wav
Language: en_US
Last Modified Date: Tue May 29 22:41:44 PDT 2007
Length in Bytes: 26038Name: AABusinessOpen.wavLanguage: en_USLast Modified Date: Tue May
29 22:41:44 PDT 2007Length in Bytes: 1638Name: AAHolidayPrompt.wavLanguage: en_USLast
Modified Date: Tue May 29 22:41:44 PDT 2007Length in Bytes: 24982
```

Downloading a Prompt File

Prompts can be copied from the Cisco Unity Express module and stored on another server or PC.

To copy or download a prompt file, use the **ccn copy prompt** command in Cisco Unity Express EXEC mode:

ccn copy prompt *prompt-filename* **url** ftp:**//***destination-ip-address***/***prompt-filename* [**language** *xx_YY*] [**username** *name* **password** *password*]

where *prompt-filename* is the file to be downloaded, *destination-ip-address* is the IP address of the FTP server, *xx_YY* is the language directory from which the prompt file is to be downloaded, *name* is the FTP server login ID, and *password* is the FTP server password.

Example:
```
se-10-0-0-0# ccn copy prompt AAprompt2.wav url ftp://10.100.10.123/AAprompt2.wav
```

Renaming a Prompt File

To rename a prompt file already existing on the Cisco Unity Express module, use the **ccn rename prompt** command in Cisco Unity Express EXEC mode:

ccn rename prompt *old-name new-name* [**language** *xx_YY*]

where *old-name* is the existing filename and *new-name* is the revised name, and *xx_YY* is the language directory in which the prompt to be renamed resides. If the language parameter is omitted in this CLI command, the system renames the prompt old-name from the default system language directory.

An error message appears if the prompt old-name does not exist in that language directory.

Example:
```
se-10-0-0-0# ccn rename prompt AAmyprompt.wav AAmyprompt2.wav
```

Deleting a Prompt File

To delete a prompt file from the Cisco Unity Express module, use the **ccn delete** command in Cisco Unity Express EXEC mode:

ccn delete prompt *prompt-filename* [**language** *xx_YY*]

where *prompt-filename* is the file to be deleted, and *xx_YY* is the language directory from which the prompt is to be deleted. If the language parameter is omitted from this CLI command, the system attempts to delete this prompt from the default system language directory.

An error message appears if the prompt prompt-filename does not exist in that language directory.

Example:

```
se-10-0-0-0# ccn delete prompt AAgreeting.wav
```

Rerecording a Prompt File

You can rerecord existing prompt files using the AvT application.

For details on how to rerecord prompts using AvT, see the "Configuring the Administration via Telephone Application" section on page 1.

Managing Applications

After you complete your pre-application tasks by uploading your scripts and prompts, you must create an application on the Cisco Unity Express module.

Cisco Unity Express supports two types of applications:

- Auto-Attendant Applications: This option is available with basic the Voice Mail license.
- Interactive Voice Response (IVR) Applications: IVR license must be purchased and installed in order to create IVR applications.

Cisco Unity Express ships with some internal applications, which are known as system applications. These system applications cannot be deleted.

The maximum number of custom Auto-Attendant applications that can be created on Cisco Unity Express is four, regardless of the hardware type. The maximum number of custom IVR applications that can be created differs depending on the hardware module. See the *Release Notes for Cisco Unity Express* for your release for the maximum number of custom IVR applications that can be created on your system.

This section describes the procedure for managing applications and contains the following sections:

- Creating and Modifying Applications, page 31 (required)
- Script Parameters for Applications, page 34
- Deleting an Application, page 35

Creating and Modifying Applications

Use the following procedure to create or modify an application.

Required Data for This Procedure

- Application name.

- Script name for the application.
- Maxsessions value. See the "Sharing Ports Among Applications and Triggers" section on page 46.
- Name and value for each parameter that the script requires. These may vary, depending on the script that you have created.

Note For more information about creating scripts, see the *Cisco Unity Express Guide to Writing Scripts*.

SUMMARY STEPS

1. **config t**
2. **ccn application** *full-name* [**aa** | **ivr**]
3. **default** [**description** | **enabled** | **maxsessions** | **script** | **parameter name**]
4. **description** "*text*"
5. **maxsessions** *number*
6. **no** [**description** | **enabled** | **maxsessions** | **script** | **parameter name**]
7. **parameter** *name* "*value*"
8. **script** *name*
9. **enabled**
10. **end**
11. **show ccn application** [**aa** | **ivr**]
12. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	`ccn application full-name [aa | ivr]`
	Example:
	`se-10-0-0-0(config)# ccn application myscript aa`
		Specifies the application to configure and enters application configuration mode. The *full-name* argument specifies the name of the application to configure.
		The optional parameter **aa** specifies that the application being configured is an Auto-Attendant application. The optional parameter **ivr** specifies that the application being configured is an IVR application. The default application type (when no optional parameter is specified) is Auto-Attendant.

	Command or Action	Purpose
Step 3	**default** [**description** | **enabled** | **maxsessions** | **script** | **parameter name**] **Example:** se-10-0-0-0(config-application)# **default maxsessions**	(Optional) Resets the application configuration as follows: • **description**—Sets the description to the name of the application. • **enabled**—Enables the application. • **maxsessions**—Sets the maxsessions value to the number of licensed ports for that application type. • **script**—No effect. • **parameter name**—Uses the script’s default value.
Step 4	**description “***text***”** **Example:** se-10-0-0-0(config-application)# **description “my application”**	(Optional) Enter a description of the application. Use quotes around the text.
Step 5	**maxsessions** *number* **Example:** se-10-0-0-0(config-application)# **maxsessions 5**	Specifies the number of callers who can access this application simultaneously.
Step 6	**no** [description | enabled | maxsessions | script | parameter name] **Example:** se-10-0-0-0(config-application)# **no description**	(Optional) Resets the application configuration as follows: • **description** —Removes the description for this application. • **enabled**—Disables the application. • **maxsessions**—Sets the maxsessions value to zero. • **script**—No effect. • **parameter name**—No effect.
Step 7	**parameter** *name* **“***value***”** **Example:** se-10-0-0-0(config-application)# **parameter MaxRetry “4”** se-10-0-0-0(config-application)# **parameter WelcomePrompt “Welcome.wav”**	Configures script parameters for the application. Each parameter must have a name and a value, which is written within quotes. For more details on Script Parameters, see the “Script Parameters for Applications” section on page 34.
Step 8	**script** *name* **Example:** se-10-0-0-0(config-application)# **script myscript.aef**	Specifies the name of the script that will be used by the application.
Step 9	**enabled** **Example:** se-10-0-0-0(config-application)# enabled	Allows the application to be accessible to the system.

	Command or Action	Purpose

Step 10	**end**
	Example:
	`se-10-0-0-0(config-application)# end`
		Returns to privileged EXEC mode.

Step 11	**show ccn application** [**aa** | **ivr**] **Example:** `se-10-0-0-0# show ccn application ivr`	Displays details of the specified type of application. If no application type is specified, all applications on the system are displayed.
Step 12	**copy running-config startup-config** **Example:** `se-10-0-0-0# copy running-config startup-config`	Copies the configuration changes to the startup configuration.

Examples

The following example illustrates the **show ccn application** output:

```
se-10-0-0-0# show ccn application

Name:                                   myscript
Description:                            Application Type: aa
Script:                                 myscript.aef
ID number:                              2
Enabled:                                yes
Maximum number of sessions:             5
MaxRetry:                                4
WelcomePrompt:                          Welcome.wav
se-10-0-0-0#
```

Script Parameters for Applications

While creating a script with Cisco Unity Express Script Editor, you can specify some script variables to be “parameters.” The value of these “parameters” can be easily modified using the Cisco Unity Express configuration commands, without the need to edit the script using the Cisco Unity Express Script Editor. This has two benefits:

- You can deploy the same script at multiple locations and still customize the script flow to some extent for that particular location without needing different scripts for different locations. For example, you can create a simple script which welcomes the caller by playing a prompt such as “Welcome to ABC stores,” and then transfers the caller to the operator. You can specify this welcome prompt and the operator extension as script parameters while creating the script. Then you can deploy the same script at multiple locations and change the welcome prompt and operator extension by using the Cisco Unity Express configuration commands.
- You can create multiple applications using the same script, but with different values for the script parameters, thereby allowing you to provide a different experience to the caller depending on the application being invoked.

To view a list of script parameters, create an application using that script, and then use the **show ccn application** command to display the list of parameters and their default values.

To change the value of these parameters, see Step 7 in Creating and Modifying Applications, page 31.

Deleting an Application

If you have an application that you do not want to keep, use this procedure to delete the application and any triggers associated with that application.

After you delete the application and triggers, the script associated with the application still remains installed on the Cisco Unity Express module.

The following system applications ship with Cisco Unity Express, and cannot be deleted:

- autoattendant
- ciscomwiapplication
- msgnotification
- promptmgmt (the AvT application)
- voicemail

Required Data for This Procedure

The following information is required to delete an application:

- Application name
- All trigger numbers or URL names associated with the application

SUMMARY STEPS

1. **show ccn application**
2. **show ccn trigger**
3. **config t**
4. **no ccn trigger** [**sip** | **jtapi** | **http**] **phonenumber** *number*
5. **no ccn application** *name*
6. **exit**
7. **show ccn application**
8. **show ccn trigger**
9. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`show ccn application`
	Example:
	`se-10-0-0-0# show ccn application`
		Displays the currently configured applications. Look for the name of the application you want to delete.

Step 2	`show ccn trigger`
	Example:
	`se-10-0-0-0# show ccn trigger`
		Displays the currently configured triggers. Look for the telephone numbers associated with the application you want to delete.

	Command or Action	Purpose
Step 3	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 4	**no ccn trigger** [**sip** | **jtapi** | **http**] **phonenumber** *number* **Example:** `se-10-0-0-0(config)# no ccn trigger sip phonenumber 7200`	Deletes a trigger associated with this application. Repeat this command for each trigger associated with the application.
Step 5	**no ccn application** *name* **Example:** `se-10-0-0-0(config)# no ccn application autoattendant`	Deletes the application called name.
Step 6	**exit** **Example:** `se-10-0-0-0(config)# exit`	Returns to privileged EXEC mode.
Step 7	**show ccn application** **Example:** `se-10-0-0-0# show ccn application`	Displays the currently configured applications. Confirm that the deleted application is not shown.
Step 8	**show ccn trigger** **Example:** `se-10-0-0-0# show ccn trigger`	Displays the triggers for each configured application. Confirm that the deleted triggers are not displayed.
Step 9	**copy running-config startup-config** **Example:** `se-10-0-0-0# copy running-config startup-config`	Copies the configuration changes to the startup configuration.

Examples

The following is sample output from the **show ccn application** and **show ccn trigger** commands:

```
se-10-0-0-0# show ccn application

Name:                           voicemail
Description:                    voicemail
Script:                         voicebrowser.aef
ID number:                      1
Enabled:                        yes
Maximum number of sessions:     8
logoutUri:                      http://localhost/voicemail/vxmlscripts/mbxLogout.jsp
uri:                            http://localhost/voicemail/vxmlscripts/login.vxml

Name:                                   autoattendant
Description:                            autoattendant
Script:                                 aa.aef
ID number:                              2
Enabled:                                yes
```

```
Maximum number of sessions:             8
MaxRetry:                               3
operExtn:                               0
welcomePrompt:                          AAWelcome.wav
se-10-0-0-0#

Name:                                   myapplication
Description:                            My AA application
Script:                                 myscript.aef
ID number:                              3
Enabled:                                yes
Maximum number of sessions:             8
MaxRetry:                               3
operExtn:                               0
welcomePrompt:                          NewAAWelcome.wav
se-10-0-0-0#

se-10-0-0-0# show ccn trigger

Name:                         6500
Type:                         SIP
Application:                  voicemail
Locale:                       systemDefault
Idle Timeout:                 5000
Enabled:                      yes
Maximum number of sessions:   3

Name:                         6700
Type:                         SIP
Application:                  autoattendant
Locale:                       systemDefault
Idle Timeout:                 5000
Enabled:                      yes
Maximum number of sessions:   8

Name:                         7200
Type:                         SIP
Application:                  myapplication
Locale:                       systemDefault
Idle Timeout:                 5000
Enabled:                      yes
Maximum number of sessions:   8
se-10-0-0-0#
```

The following configuration deletes the auto-attendant application and its trigger:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# no ccn trigger sip phonenumber 50170
se-10-0-0-0(config)# no ccn application myapplication
se-10-0-0-0(config)# exit
```

Now the output of the **show** commands looks similar to the following:

```
se-10-0-0-0# show ccn application

Name:                                   voicemail
Description:                            voicemail
Script:                                 voicebrowser.aef
ID number:                              1
Enabled:                                yes
Maximum number of sessions:             8
logoutUri:                              http://localhost/voicemail/vxmlscripts/m
bxLogout.jsp
uri:                                    http://localhost/voicemail/vxmlscripts/l
```

```
ogin.vxml
se-10-0-0-0#

Name:                                   autoattendant
Description:                            autoattendant
Script:                                 aa.aef
ID number:                              2
Enabled:                                yes
Maximum number of sessions:             8
MaxRetry:                               3
operExtn:                               0
welcomePrompt:                          AAWelcome.wav
se-10-0-0-0#

se-10-0-0-0# show ccn trigger

Name:                         6500
Type:                         SIP
Application:                  voicemail
Locale:                       systemDefault
Idle Timeout:                 5000
Enabled:                      yes
Maximum number of sessions:   3

Name:                         6700
Type:                         SIP
Application:                  autoattendant
Locale:                       systemDefault
Idle Timeout:                 5000
Enabled:                      yes
Maximum number of sessions:   8
se-10-0-0-0#
```

Managing Triggers

Triggers are incoming events that invoke application which in turn starts executing the script associated with that application. For example, the incoming event can be an incoming call or an incoming HTTP request.

After you have created and configured your application, you need to create a trigger on the Cisco Unity Express module to point to that application.

Cisco Unity Express supports three types of triggers:

- SIP triggers—Use this type of trigger to invoke applications in Cisco Unified CME and Cisco SRST mode. This type of trigger is identified by the phonenumber which is dialed to invoke the desired application.
- JTAPI triggers—Use this type of trigger to invoke applications in Cisco Unified Communications Manager mode. This type of trigger is identified by the phonenumber which is dialed to invoke the desired application.
- HTTP triggers—Use this type of trigger to invoke applications using an incoming HTTP request. Such a trigger is identified by the URL suffix of the incoming HTTP request. This type of trigger can only be used if an IVR license has been purchased and installed on the system.

Cisco Unity Express ships with some internal triggers, which are known as system triggers. These system triggers cannot be deleted.

This section describes the procedure for managing triggers and contains the following sections:

- Configuring SIP Triggers for the Applications, page 39
- Configuring JTAPI Triggers for the Applications (Cisco Unified Communications Manager Only), page 43
- Configuring HTTP Triggers for the Applications, page 45
- Configuring Multiple Triggers for an Application, page 46
- Sharing Ports Among Applications and Triggers, page 46

Configuring SIP Triggers for the Applications

Cisco Unity Express uses SIP to handle incoming calls in Cisco Unified CME and Cisco SRST mode. If you are deploying Cisco Unity Express in either of these modes, you must configure a SIP trigger for your application so that it can be invoked by incoming calls. This type of trigger is identified by the phone number which is dialed to invoke the desired application.

The telephone number that identifies your SIP trigger must match the dial-peer configured on the Cisco IOS SIP gateway. In order for Cisco Unity Express to be able to handle incoming calls on this phone number properly, you must configure the dial-peer on the Cisco IOS SIP gateway as follows:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# dial-peer voice 6000 voip
se-10-0-0-0(config)# destination-pattern 6...
se-10-0-0-0(config)# session protocol sipv2
se-10-0-0-0(config)# session target ipv4:1.100.50.125
se-10-0-0-0(config)# dtmf-relay sip-notify
se-10-0-0-0(config)# codec g711ulaw
se-10-0-0-0(config)# no vad
```

Note Make sure that VAD is turned OFF on the dial-peer, it is configured to use g711ulaw codec and the session target is pointing to the Cisco Unity Express module.

Cisco Unity Express supports a maximum of 8 SIP triggers for all applications combined, regardless of the hardware type.

Required Data for This Procedure

The following information is required to configure the SIP triggers for applications:

- Telephone number that invokes the application. The number must be different for different applications. The *number* value must match one of the patterns configured in the *destination-pattern* field of the SIP dial peer pointing to Cisco Unity Express.
- Maximum number of callers that can access the trigger simultaneously. See "Sharing Ports Among Applications and Triggers" on page 46 for guidelines on assigning this value.

SUMMARY STEPS

1. **config t**
2. **ccn trigger sip phonenumber** *number*
3. **application** *application-name*
4. **enabled**
5. **maxsessions** *number*

6. **locale** *xx_YY*
7. **end**
8. **show ccn trigger**
9. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** se-10-0-0-0(config)# config t	Enters configuration mode.
Step 2	**ccn trigger sip phonenumber** *number* **Example:** se-10-0-0-0(config)# **ccn trigger sip phonenumber 50150** se-10-0-0-0(config)# **ccn trigger sip phonenumber 50160**	Specifies the telephone number that acts as the trigger to start the application on the Cisco Unity Express module and enters trigger configuration mode. • *number*—The value should match one of the patterns configured in the *destination-pattern* field of the SIP dial peer pointing to Cisco Unity Express. **Note** Beginning with Cisco Unity Express 8.0, this number can be a combination of digits and wildcard characters. For more information, see the "Wild Card Trigger Patterns" section on page 42
Step 3	**application** *application-name* **Example:** se-10-0-0-0(config-trigger)# **application voicemail** se-10-0-0-0(config-trigger)# **application** autoattendant se-10-0-0-0(config-trigger)# **application promptmgmt**	Specifies the name of the application to invoke when a call is made to the trigger phone number.
Step 4	**enabled** **Example:** se-10-0-0-0(config-trigger)# **enabled**	Enables the trigger.
Step 5	**maxsessions** *number* **Example:** se-10-0-0-0(config-trigger)# **maxsessions 3** se-10-0-0-0(config-trigger)# **maxsessions 6**	Specifies the maximum number of callers that this application can handle simultaneously. See the "Sharing Ports Among Applications and Triggers" section on page 46 for guidelines on assigning this value.

	Command or Action	Purpose
Step 6	**locale** *xx_YY* **Example:** `se-10-0-0-0(config-trigger)#  locale en_US`	(Optional) Specifies the trigger language. Any prompts being played out by an application invoked by this trigger will be played out in this language. Use this configuration only if you have more than one language installed on the system. The default for this configuration is to use the system default language as the trigger language.

Step 7	**end**
	
	Example:
	`se-10-0-0-0(config-trigger)# end`
		Returns to privileged EXEC mode.

Step 8	**show ccn trigger** **Example:** `se-10-0-0-0# show ccn trigger`	Displays the details of all configured triggers.
Step 9	**copy running-config startup-config** **Example:** `se-10-0-0-0# copy running-config startup-config`	Copies the configuration changes to the startup configuration.

Examples

The following sample configuration sets two triggers on the Cisco Unity Express module:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# ccn trigger sip phonenumber 50150
se-10-0-0-0(config-trigger)# application voicemail
se-10-0-0-0(config-trigger)# maxsessions 4
se-10-0-0-0(config-trigger)# enabled
se-10-0-0-0(config-trigger)# end
se-10-0-0-0(config)#
se-10-0-0-0(config)# ccn trigger sip phonenumber 50160
se-10-0-0-0(config-trigger)# application autoattendant
se-10-0-0-0(config-trigger)# maxsessions 3
se-10-0-0-0(config-trigger)# enabled
se-10-0-0-0(config-trigger)# end
se-10-0-0-0#
```

The output of **show ccn trigger** looks similar to the following:

```
se-10-0-0-0# show ccn trigger

Name:                          50150
Type:                          SIP
Application:                   voicemail
Locale:                        systemDefault
Idle Timeout: 10000
Enabled:                       yes
Maximum number of sessions:    4

Name:                          50160
Type:                          SIP
Application:                   autoattendant
```

```
Locale:                       systemDefault
Idle Timeout: 10000
Enabled:                      yes
Maximum number of sessions:   3
se-10-0-0-0#
```

Wild Card Trigger Patterns

Beginning with Cisco Unity Express 8.0, the trigger number can be a combination of digits and wildcard characters. Incoming calls targeted to a number that matches the pattern cause the associated script to be invoked. The script determines which number was dialed by inspecting the called number attribute associated with the call. Cisco Unity Express supports a limit of 32 characters in the trigger pattern. Wildcard patterns are supported for both SIP and JTAPI triggers.

Table 5-2 shows the trigger pattern wildcards and special characters supported in Cisco Unity Express 8.0.

Table 5-2 Trigger Pattern Wildcards and Special Characters

Character	Description	Examples
X	The X wildcard matches any single digit in the range 0 through 9.	The trigger pattern 9XXX matches all numbers in the range 9000 through 9999.
!	The exclamation point (!) wildcard matches one or more digits in the range 0 through 9.	The trigger pattern 91! matches all numbers in the range 910 through 91999999999999999999999999999999.
?	The question mark (?) wildcard matches zero or more occurrences of the preceding digit or wildcard value.	The trigger pattern 91X? matches all numbers in the range 91 through 91999999999999999999999999999999.
+	The plus sign (+) wildcard matches one or more occurrences of the preceding digit or wildcard value.	The trigger pattern 91X+ matches all numbers in the range 910 through 91999999999999999999999999999999.
[ ]	The square bracket ([ ]) characters enclose a range of values.	The trigger pattern 813510[012345] matches all numbers in the range 8135100 through 8135105.
-	The hyphen (-) character, used with the square brackets, denotes a range of values.	The trigger pattern 813510[0-5] matches all numbers in the range 8135100 through 8135105.
^	The circumflex (^) character, used with the square brackets, negates a range of values. Ensure that it is the first character following the opening bracket ([). Each trigger pattern can have only one ^ character.	The trigger pattern 813510[^0-5] matches all numbers in the range 8135106 through 8135109.

Wildcard patterns are based on Cisco Unified Communications Manager route patterns. The rules for choosing between multiple wildcard patterns matching an incoming call are similar to those used by Cisco Unified Communications Manager. For each pattern that is a candidate match for the dial string, Cisco Unity Express calculates the number of other dial strings of the same length as the input dial string that would match each pattern, and then selects the pattern that has the fewest alternative dial string matches.

Configuring JTAPI Triggers for the Applications (Cisco Unified Communications Manager Only)

Cisco Unity Express uses JTAPI to handle incoming calls in Cisco Unified Communications Manager mode. If you are deploying Cisco Unity Express in Cisco Unified Communications Manager mode, you must configure a JTAPI trigger for your application so that it can be invoked by incoming calls. This type of trigger is identified by the phone number which is dialed to invoke the desired application.

The telephone number that identifies your JTAPI trigger must match the Route Point configured on the Cisco Unified Communications Manager.

Beginning in Cisco Unity Express 8.0, the trigger number can be a combination of digits and wildcard characters. See the "Wild Card Trigger Patterns" section on page 42.

Note This Route Point must be associated with the JTAPI user configured on Cisco Unified Communications Manager. This same JTAPI user must also be configured on Cisco Unity Express module. See the "Configuring Triggers" section on page 1 for details on JTAPI user configuration.

Cisco Unity Express supports a maximum of 8 JTAPI triggers for all applications combined, regardless of the hardware type.

This configuration is required for only for Cisco Unified Communications Manager mode.

Required Data for This Procedure

The following information is required to configure the JTAPI triggers for applications:

- Telephone number that invokes the application. The number must be unique for each application.
- Number of seconds the system must wait for a caller response before it times out and drops the call.
- Language to use for the prompts. Cisco Unity Express supports many languages. Only one can be installed on the system. See the *Release Notes for Cisco Unity Express* for a list of available languages.
- Maximum number of callers that can access the trigger simultaneously. See the "Sharing Ports Among Applications and Triggers" section on page 46 for guidelines on assigning this value.

SUMMARY STEPS

1. **config t**
2. **ccn trigger jtapi phonenumber** *number*
3. **application** *application-name*
4. **enabled**
5. **maxsessions** *number*
6. **locale** *xx_YY*
7. **end**
8. **show ccn trigger**
9. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`ccn trigger jtapi phonenumber`** *`number`*
	Example:
	`se-10-0-0-0(config)#` **`ccn trigger jtapi phonenumber 6700`**
		Specifies the telephone number that acts as the trigger to start the application on Cisco Unity Express and enters trigger configuration mode. The *number* value must match a JTAPI route point configured on Cisco Unified Communications Manager.
		Note Beginning with Cisco Unity Express 8.0, this number can be a combination of digits and wildcard characters. For more information, see the "Wild Card Trigger Patterns" section on page 42

Step 3	**`application`** *`application-name`*
	Example:
	`se-10-0-0-0(config-trigger)#` **`application promptmgmt`**
		Specifies the name of the application to invoke when a call is made to the trigger phone number.

Step 4	**`enabled`**
	Example:
	`se-10-0-0-0(config-trigger)#` **`enabled`**
		Enables the trigger.

Step 5	**`maxsessions`** *`number`*
	Example:
	`se-10-0-0-0(config-trigger)#` **`maxsessions 3`**
		Specifies the maximum number of callers that this trigger can handle simultaneously. See the "Sharing Ports Among Applications and Triggers" section on page 46 for guidelines on assigning this value.

Step 6	**`locale`** *`xx_YY`*
	Example:
	`se-10-0-0-0(config-trigger)#` **`locale en_US`**
		(Optional) Specifies the trigger language. Any prompts being played out by an application invoked by this trigger will be played out in this language.
		Use this configuration only if you have more than one language installed on the system. The default for this configuration is to use the system default language as the trigger language.

Step 7	**`end`**
	Example:
	`se-10-0-0-0(config-trigger)#` **`end`**
		Returns to privileged EXEC mode.

	Command or Action	Purpose
Step 8	**show ccn trigger** **Example:** se-10-0-0-0# **show ccn trigger**	Displays the details of all configured triggers.
Step 9	**copy running-config startup-config** **Example:** se-10-0-0-0# **copy running-config startup-config**	Copies the configuration changes to the startup configuration.

Examples

The following sample configuration sets two triggers on the Cisco Unity Express module:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# ccn trigger jtapi phonenumber 6500
se-10-0-0-0(config-trigger)# application voicemail
se-10-0-0-0(config-trigger)# maxsessions 4
se-10-0-0-0(config-trigger)# enabled
se-10-0-0-0(config-trigger)# end
se-10-0-0-0(config)#
se-10-0-0-0(config)# ccn trigger jtapi phonenumber 6700
se-10-0-0-0(config-trigger)# application autoattendant
se-10-0-0-0(config-trigger)# maxsessions 8
se-10-0-0-0(config-trigger)# enabled
se-10-0-0-0(config-trigger)# end
se-10-0-0-0#
```

Output of the **show ccn trigger** command looks similar to the following:

```
se-10-0-0-0# show ccn trigger

Name:                         6500
Type:                         JTAPI
Application:                  voicemail
Locale:                       systemDefault
Idle Timeout:                 10000
Enabled:                      yes
Maximum number of sessions:   4

Name:                         6700
Type:                         JTAPI
Application:                  autoattendant
Locale:                       systemDefault
Idle Timeout:                 10000
Enabled:                      yes
Maximum number of sessions:   8
se-10-0-0-0#
```

Configuring HTTP Triggers for the Applications

Cisco Unity Express can accept incoming HTTP requests to invoke an application using an HTTP trigger. For example, you can use it to initiate an IVR application notifying customers that their order has been filled and shipped. This type of trigger is identified by the URL suffix of the incoming HTTP request.

This type of trigger can only be used if an IVR license has been purchased and installed on the system.

For details on how to configure and use HTTP triggers, see the *Cisco Unity Express Interactive Voice Response CLI Administrator Guide*.

Configuring Multiple Triggers for an Application

Your network may require multiple triggers for one or more Cisco Unity Express applications. For example, the following are some scenarios where multiple triggers for the same application are useful:

- Multiple language support—You have an auto-attendant application which you want to deploy in two different languages. One way to achieve this would be to have two different triggers (call-in numbers) pointing to the same application, but with different values for the **locale** parameter.

  For example, assume that you have call-in numbers 6700 and 6900 (both pointing to the same auto-attendant application), the locale for the trigger 6700 is configured to be *xx_XX,* and the locale for the trigger 6900 is configured to be *yy_YY.* If the callers dial 6700, they will hear the auto-attendant greetings in the language *xx_XX*. If the callers dial 6900, they will hear the auto-attendant greetings in the language *yy_YY.*
- Different call treatment for internal and external callers—You have an auto-attendant application, and you want to provide slightly different Menu options for internal and external callers. In other words, you want to provide an option to the internal callers to transfer to the inventory department, but you do not want to present this option to the external callers. One way to achieve this would be to have two different triggers (call-in numbers) pointing to the same application, and by making a branching decision in your script by checking the called number using the "Get Call Contact Info" step.

Repeat the procedure described in the "Configuring SIP Triggers for the Applications" section on page 39 and the "Configuring JTAPI Triggers for the Applications (Cisco Unified Communications Manager Only)" section on page 43 (depending on your deployment mode) to create multiple triggers for an application.

Sharing Ports Among Applications and Triggers

Accessing an Application

The maximum number of callers that can access an application concurrently is determined by two parameters:

- The maxsessions value configured for the triggers invoking the application.
- The maxsessions value configured for the application itself.

If more calls than the trigger's configured maxsession value are received, callers hear a busy tone.

If more calls than the application's configured maxsession value are received, Cisco Unity Express plays an error prompt to the callers.

The following example shows how the maxsessions values for applications and triggers play a role in how many active calls can be made to an application. In this example:

- Your module has 8 ports.
- You assigned the auto-attendant application a maxsessions value of 5.
- You configured 2 triggers both invoking the same auto-attendant application.

- You configured one trigger with a maxsessions value of 2 and the other trigger with a maxsessions value of 4.

The maximum number of callers that can access the auto-attendant application simultaneously is five, not six. This is because although your system has a total of six sessions available for the two triggers, they both are accessing the same application, which allows only five concurrent sessions. The maxsessions value of the application acts as the gating factor in this case.

If you configure both triggers with a maxsessions value of **2**, the maximum number of concurrent calls to the application is four, not five. This is because the system has a total of only four ports assigned to the two triggers. The maxsessions value assigned to the triggers acts as the factor in this example.

Sharing Ports Among Different Applications

Cisco Unity Express supports multiple voice applications, and each of these applications need voice ports in order to execute. Consider the expected call traffic for each application when assigning the maxsessions for them. One application may have a higher call volume and therefore need more sessions than another, and at the same time you may want each application to have at least one session available for incoming calls. You should distribute the ports to your applications keeping in mind the usage of each application.

For example, your module has four ports and you configure the voice-mail application to have four maxsessions, and the auto-attendant application also to have four maxsessions. If four callers access voice-mail simultaneously, no ports is available for auto-attendant callers. Only when zero, one, two, or three callers access voice-mail simultaneously is at least one port available for auto-attendant.

As another example, you configure the voice-mail auto-attendant applications to have three maxsessions. At no time will one application use up all the ports. If voice-mail has three active calls, one caller can access auto-attendant. A second call to either voice-mail or auto-attendant is not successful.

Configuring Holiday Lists

Cisco Unity Express permits configuration of holiday lists that can be used by an application to play a customizable greeting to callers when the company is closed for a holiday. The following sections describe how to configure and use Cisco Unity Express holiday lists:

- Overview of Holidays, page 47
- Using the Holiday Lists, page 48
- Configuring Year-Specific Holiday Lists, page 49
- Displaying the Holiday List, page 49
- Deleting Holidays from the List, page 51

Overview of Holidays

You can configure:

- Year-specific holidays
- Fixed holidays

Year-Specific Holidays

- Cisco Unity Express supports up to three year-specific holiday lists for: the previous year, the current year, and the next year. If a year has no configured entries, the system handles that year as having no year-specific holidays.

  For example, if the current year is 2005 and you have not configured entries for 2006 (the next year), the system handles 2006 as having zero (0) holidays. You may configure holidays for 2005 and 2006 (the next year) but not for 2007.
- Each year-specific list can contain a maximum of 26 holidays.
- By default, all three year-specific holiday lists are empty.
- The administrator can delete entries from a previous year list but cannot add or modify that list in any other way.
- The system automatically deletes the previous year list at the beginning of the new calendar year.
- For example, the system will delete the 2004 holiday list on January 1, 2006.
- To copy holidays from one year to the next, use the GUI option Copy all to next year under **System > Holiday Settings**.

Fixed Holidays

- Fixed holidays are permanent holidays which apply to all years and do not need to be re-configured year after year (unlike year-specific holidays). If a holiday falls on the same date every year, those may be configured as fixed holidays.

  For example, if your business is always closed on January 1st for New Year celebrations, then you may configure January 1st as a fixed holiday.
- A maximum of 10 fixed holidays can be configured on the system.
- By default, there are no fixed holidays configured on the system.
- Fixed holidays may overlap with year-specific holidays. If you create a year-specific holiday
- that overlaps with a fixed holiday, a warning is issued. However, no warning is issued if you try to create a fixed holiday that overlaps with a year-specific holiday.

To configure holiday lists, use the graphical user interface (GUI) System > Holiday Settings option or the command-line interface (CLI) commands described in this section.

Using the Holiday Lists

The Cisco Unity Express Editor provides a step “Is Holiday” that checks the holidays configured on the system to determine whether the specified date is a holiday or not. The step takes as input the date to check against the holiday list. See the *Cisco Unity Express Guide to Writing and Editing Scripts* for more information on steps.

For example, you can use the “Is Holiday” step in your script to check if the current day is a holiday. If it is a holiday, you can play a customized greeting to the caller, such as “We are closed today. If this is an emergency, please call 1-222-555-0150 for assistance. Otherwise, please call back later.”

Configuring Holiday Lists

Prerequisites

Cisco Unity Express 3.0 or a later version

Configuring Year-Specific Holiday Lists

Use the following command in Cisco Unity Express configuration mode to configure a year-specific holiday list:

calendar holiday date *yyyy mm dd* [**description** *holiday-description*]

where *yyyy* is the 4-digit year, *mm* is the 2-digit month, *dd* is the 2-digit day, and *holiday-description* is an optional description of the holiday. If the description is more than one word, enclose the text in quotes (“ ”).

The valid values for *yyyy* are the current year or the next year. An error message appears if the year or date is out of range.

Example:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# calendar holiday date 2005 05 30 description “Memorial Day”
se-10-0-0-0(config)# exit
se-10-0-0-0#
```

Configuring the Fixed Holiday List

Use the following command in Cisco Unity Express configuration mode to configure a fixed holiday:

calendar holiday fixed *month day* [**description** *holiday-description*]

where *month* is the 2-digit month, *day* is the 2-digit day, and *holiday-description* is an optional description of the holiday. If the description is more than one word, enclose the text in quotes (“ ”).

Example:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# calendar holiday fixed 07 04 description “Independence Day”
se-10-0-0-0(config)# exit
se-10-0-0-0#
```

Displaying the Holiday List

Several CLI commands are available in Cisco Unity Express EXEC mode for displaying the holiday lists.

Prerequisites

Cisco Unity Express 3.0 or a later version

Displaying All Holiday Lists

The following command displays all the holiday lists configured on the system:

show calendar holiday [**all**]

This command displays the date and description for all holidays for all years. This display includes both year-specific holidays and fixed holidays. The output of this command appears similar to the following:

```
se-10-0-0-0# show calendar holiday

********************************
           Year: 2004
********************************
September 04    Labor Day
November  25    Thanksgiving

********************************
           Year: 2005
********************************
July      04    July 4th
September 05    Labor Day
November  24    Thanksgiving
December  25    Christmas
```

Displaying Holiday Lists for a Specific Year

The following command displays the holidays configured for a specific year:

show calendar holiday year *yyyy*

where *yyyy* is the 4-digit year. This command displays the date and description for all holidays configured for the specified year. This display includes both year-specific holidays and fixed holidays. If no holidays are configured for that year and the fixed holiday list is empty, the message “No holidays found for the specified year” appears. The output of this command appears similar to the following:

```
se-10-0-0-0-0# show calendar holiday year 2005

********************************
           Year: 2005
********************************
July      04    July 4th
September 05    Labor Day
November  24    Thanksgiving
December  25    Christmas
```

Displaying Holiday Lists for a Specific Month

The following command displays the holidays configured for a specific month in a specified year:

show calendar holiday year *yyyy* **month** *mm*

where *yyyy* is the 4-digit year and *mm* is the 2-digit month. This command displays the date and description for all holidays configured for the specified month in the specified year.This display includes both year-specific holidays and fixed holidays. If no holidays are configured for that month and there are no holidays in that month, the message “No holidays found for the specified month” appears.

The output of this command appears similar to the following:

```
se-10-0-0-0# show calendar holiday year 2005 month 12

********************************
           Year: 2005
********************************
December  25    Christmas
```

Deleting Holidays from the List

Several CLI commands are available in Cisco Unity Express configuration mode for deleting holidays from the list.

Prerequisites

Cisco Unity Express 3.0 or a later version

Deleting a Year-Specific Holiday from the Holiday List

The following command deletes a year-specific holiday:

Caution Use this command with caution because this operation is irreversible. Do not press the “Enter” key after the year; doing so deletes the holiday list for the entire year.

no calendar holiday date *yyyy mm dd*

where *yyyy* is the 4-digit year, *mm* is the 2-digit month, and *dd* is the 2-digit day.

Example:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# no calendar holiday date 2004 11 25
se-10-0-0-0(config)# end
```

Deleting Year-Specific Holidays from a Specific Month

Caution Use this command with caution because this operation is irreversible and can cause the loss of the temporary holiday configuration for the entire month.

The following command deletes the year-specific holidays configured for a specific month in the specified year:

no calendar holiday year *yyyy* **month** *mm*

where *yyyy* is the 4-digit year and *mm* is the 2-digit month.

Example:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# no calendar holiday year 2004 month 09
se-10-0-0-0(config)# end
```

Deleting Year-Specific Holidays for a Specific Year

Caution Use this command with caution because this operation is irreversible and may cause the loss of the holiday configuration for the entire year.

The following command deletes all the year-specific holidays configured for the specified year:

no calendar holiday year *yyyy*

where *yyyy* is the 4-digit year.

Example:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# no calendar holiday year 2004
se-10-0-0-0(config)# end
```

Deleting a Fixed Holiday from the Holiday List

The following command deletes a fixed holiday:

no calendar holiday fixed *month day*

where *month* is the 2-digit month and *day* is the 2-digit day.

Example:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# no calendar holiday fixed 07 04
se-10-0-0-0(config)# exit
```

Configuring Business Hours

Cisco Unity Express provides support for business hour schedules that specify the hours when the business is open or closed during the week.

The following sections describe this feature, its configuration, and the procedures for using it:

- Overview of Business-Hours Schedules, page 53
- Using the Business-Hours Schedule, page 53
- Creating a Business-Hours Schedule, page 53
- Modifying Business-Hours Schedules, page 55
- Displaying Business-Hours Schedules, page 57
- Deleting a Business-Hours Schedule, page 58

Overview of Business-Hours Schedules

You can configure up to 4 weekly business-hours schedules. Each day is divided into 48 half-hour time slots. Each of these time slots can be configured to specify whether the business is open or closed during that time. Use the graphical user interface (GUI) **System > Business Hours Settings** option or the command-line interface (CLI) commands described in this section to configure these slots.

The Cisco Unity Express system ships with one default schedule called "systemschedule." This schedule indicates the business is open 24 hours per day, 7 days per week. Use the GUI **System > Business Hours Settings** option or CLI commands to modify or delete this default schedule. This schedule counts toward the maximum limit of 4 business-hours schedules.

Using the Business-Hours Schedule

The Cisco Unity Express Editor provides a step "Business Hours" that checks whether the business is open or closed during a specified time slot. The step takes three parameters as input: a date, time and the name of a schedule configured on the system. See the *Cisco Unity Express Guide to Writing and Editing Scripts* for more information about steps.

For example, you can use the "Business Hours" step in your script to check whether the business is currently open or not. If it is closed, you can play a customized greeting to the caller, such as "You have reached us during our off-hours. If this is an emergency, please call 1-222-555-0150 for assistance. Otherwise, please call back later."

Creating a Business-Hours Schedule

Follow this procedure to create a business-hours schedule.

Data Required for This Procedure

The following information is required to configure a business-hours schedule:

- Schedule name

  The maximum length of the name is 31 alphanumeric characters, including uppercase letters A to Z, lowercase letters a to z, digits 0 to 9, underscore (_), and dash (-). The first character of the name must be a letter.

  If a schedule with this name does not exist, the system will create it. By default, a newly created schedule is open, 24 hours per day, 7 days per week.

  If the schedule already exists, any changes will modify the schedule.

- Day of the week
- Starting and ending clock times when the business is open and closed

SUMMARY STEPS

1. **config t**
2. **calendar biz-schedule** *schedule-name*
3. **closed day** *day-of-week* **from** *hh:mm* **to** *hh:mm*
4. **open day** *day-of-week* **from** *hh:mm* **to** *hh:mm*

5. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**calendar biz-schedule** *schedule-name* **Example:** `se-10-0-0-0(config)# calendar biz-schedule normal_hours`	Specifies the name for the business-hours schedule and enters business configuration mode. The name must be one word. If a schedule with this name does not exist, the system creates it. If the schedule already exists, any changes modify the schedule. If the maximum number of schedules exists, the system displays an error message.

Step 3	**closed day** *day-of-week* **from** *hh***:***mm* **to** *hh***:***mm*
	Example:
	`se-10-0-0-0(config-business)# closed day 2 from 00:00 to 08:30`
	`se-10-0-0-0(config-business)# closed day 2 from 17:30 to 24:00`
		Enter the day of the week and the times when the business is closed for that day. Valid values for *day-of-week* are 1 to 7, where 1 represents Sunday, 2 is Monday, 3 is Tuesday, 4 is Wednesday, 5 is Thursday, 6 is Friday, and 7 is Saturday. Use the 24-hour clock format for *hh*. Valid *mm* values are 00 and 30 only.

Step 4	**open day** *day-of-week* **from** *hh***:***mm* **to** *hh***:***mm* **Example:** `se-10-0-0-0(config-business)# open day 2 from 08:30 to 17:30`	Enter the day of the week and the times when the business is open for that day. Valid values for *day-of-week* are 1 to 7, where 1 represents Sunday, and so on. Use the 24-hour clock format for *hh*. Valid *mm* values are 00 and 30 only.
Step 5	Repeat Steps 3 and 4 for each day of the week that needs business hours scheduled.	—

Step 6	**end**
	Example:
	`se-10-0-0-0(config-business)# end`
		Returns to privileged EXEC mode.

Examples

The following example configures a new business-hours schedule:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# calendar biz-schedule normal
Adding new schedule
se-10-0-0-0(config-business)# closed day 1 from 00:00 to 24:00
se-10-0-0-0(config-business)# closed day 2 from 00:00 to 08:30
se-10-0-0-0(config-business)# closed day 2 from 17:30 to 24:00
se-10-0-0-0(config-business)# closed day 3 from 00:00 to 08:30
se-10-0-0-0(config-business)# closed day 3 from 17:30 to 24:00
se-10-0-0-0(config-business)# closed day 4 from 00:00 to 08:30
se-10-0-0-0(config-business)# closed day 4 from 17:30 to 24:00
se-10-0-0-0(config-business)# closed day 5 from 00:00 to 08:30
se-10-0-0-0(config-business)# closed day 5 from 20:00 to 24:00
se-10-0-0-0(config-business)# closed day 6 from 00:00 to 08:30
se-10-0-0-0(config-business)# closed day 6 from 18:00 to 24:00
se-10-0-0-0(config-business)# closed day 7 from 00:00 to 09:00
se-10-0-0-0(config-business)# closed day 7 from 13:00 to 24:00
se-10-0-0-0(config-business)# end
```

Modifying Business-Hours Schedules

In Cisco Unity Express configuration mode, use the following command to access a business-hours schedule for modification:

calendar biz-schedule *schedule-name*

where *schedule-name* is the name of the business-hours schedule to modify. If a schedule with the specified business name does not exist, the system creates it.

The following example accesses the existing "normal" business-hours schedule:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# calendar biz-schedule normal
Modifying existing schedule
se-10-0-0-0(config-business)# open day 1 from 09:00 to 12:00
se-10-0-0-0(config-business)# end
se-10-0-0-0#
```

Only the hours specified using these commands are affected. The other time slots in the business-hours schedule are not modified.

Changing the Status of Open or Closed Hours

To modify an existing schedule, specify the open and closed hours for each day as needed.

Changing an Open Slot to a Closed Slot

Use either of the following configuration mode commands to change an open slot to a closed slot:

no open day *day-of-week* **from** *hh***:***mm* **to** *hh***:***mm*

closed day *day-of-week* **from** *hh***:***mm* **to** *hh***:***mm*

where *day-of-week* is the numeric day of the week (1 equals Sunday), *hh* are hours in the 24-hour clock format, and *mm* are minutes, either 00 or 30.

For example, use the **no open day 2 from 09:00 to 10:00** command if your business is open on Monday from 09:00 to 17:00; and use the **closed day 3 from 09:00 to10:00** command if your business is closed Tuesday 9:00 a.m. to 10:00 a.m.

Changing a Closed Slot to an Open Slot

Use either of the following commands to change a closed slot to an open slot:

no closed day *day-of-week* **from** *hh***:***mm* **to** *hh***:***mm*

open day *day-of-week* **from** *hh***:***mm* **to** *hh***:***mm*

where *day-of-week* is the numeric day of the week (1 equals Sunday), *hh* are hours in the 24-hour clock format, and *mm* are minutes, either 00 or 30.

For example, if Monday is closed from 00:00 to 10:00, then **no closed day 2 from 09:00 to 10:00** or **open day 2 from 09:00 to 10:00** opens the Monday time slot 9:00 a.m. to 10:00 a.m.

Examples

The following output shows the “normal” business-hours schedule:

```
se-10-0-0-0# show calendar biz-schedule normal

******************************
Schedule: normal
Day                 Open Hours
-------------------------------
Sunday              None
Monday              08:30 to 17:30
Tuesday             08:30 to 17:30
Wednesday           08:30 to 17:30
Thursday            08:30 to 20:00
Friday              08:30 to 18:00
Saturday            09:00 to 13:00
```

The following commands modify the “normal” business hours by closing Monday hours from 8:30 to 9:30 and opening Saturday hours from 1:00 p.m. to 2:00 p.m.:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# calendar biz-schedule normal
se-10-0-0-0(config-business)# no open day 2 from 08:30 to 09:30
se-10-0-0-0(config-business)# no closed day 7 from 13:00 to 14:00
se-10-0-0-0(config-business)# end
```

The following output shows the changed schedule:

```
se-10-0-0-0# show calendar biz-schedule normal

******************************
Schedule: normal
Day                 Open Hours
-------------------------------
Sunday              None
Monday              09:30 to 17:30
Tuesday             08:30 to 17:30
Wednesday           08:30 to 17:30
Thursday            08:30 to 20:00
Friday              08:30 to 18:00
Saturday            09:00 to 14:00
```

Displaying Business-Hours Schedules

Several CLI commands are available in Cisco Unity Express EXEC mode for displaying the business-hours schedules.

Displaying a Specific Schedule

The following command displays a specific business-hours schedule:

show calendar biz-schedule *schedule-name*

where *schedule-name* is the name of the schedule. This command displays each day of the week and the open hours. The output of this command appears similar to the following.

```
se-10-0-0-0# show calendar biz-schedule normal

******************************
Schedule: normal
Day                 Open Hours
-------------------------------
Sunday              None
Monday              08:30 to 17:30
Tuesday             08:30 to 17:30
Wednesday           08:30 to 17:30
Thursday            08:30 to 20:00
Friday              08:30 to 18:00
Saturday            09:00 to 13:00
```

Displaying All Businesses Schedules

The following command displays all the configured business-hours schedules in the system:

show calendar biz-schedule [**all**]

This command displays the open hours for each day of the week for each schedule. The output of this command appears similar to the following:

```
sse-10-0-0-0# show calendar biz-schedule

******************************
Schedule: systemschedule
Day                 Open Hours
-------------------------------
Sunday              Open all day
Monday              Open all day
Tuesday             Open all day
Wednesday           Open all day
Thursday            Open all day
Friday              Open all day
Saturday            Open all day

******************************
Schedule: normal
Day                 Open Hours
-------------------------------
Sunday              None
Monday              08:30 to 17:30
Tuesday             08:30 to 17:30
Wednesday           08:30 to 17:30
```

```
Thursday            08:30 to 20:00
Friday              08:30 to 18:00
Saturday            09:00 to 13:00

******************************
Schedule: holiday-season
Day                 Open Hours
-------------------------------
Sunday              09:00 to 15:00
Monday              08:30 to 17:30
Tuesday             08:30 to 17:30
Wednesday           08:30 to 17:30
Thursday            08:00 to 21:00
Friday              08:00 to 21:00
Saturday            08:00 to 21:30
```

Deleting a Business-Hours Schedule

The following configuration mode command deletes a specified business-hours schedule:

no calendar biz-schedule *schedule-name*

where *schedule-name* is the name of the business-hours schedule to delete.

If you delete a business-hours schedule which is being used in the “Business Hours” step in an application, the step assumes that the business is open 24 hours a day, 7 days a week.

The following example deletes the “normal” business-hours schedule:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# no calendar biz-schedule normal
se-10-0-0-0(config)# exit
se-10-0-0-0#
```

Configuring System-Wide Fax Parameters

Starting in version 3.1 the convergence feature set to includes fax support. It allows both inbound and outbound faxing. Outbound faxing enables faxes to be printed to the fax machine.

This functionality requires T.37 fax support from the Cisco IOS gateways. Third-party fax servers are not supported.

After you complete the appropriate prerequisites (see below), you can configure the system level fax parameters as described below. This procedure also includes enabling a mailbox to receive faxes from a fax gateway.

To send and receive a fax on Cisco Unity Express, you must configure the inbound and outbound fax gateways. The inbound gateway is used for receiving a fax, and the outbound gateway is used for sending or printing a fax. You can use the same Cisco IOS gateway for both inbound and outbound faxing. Also, in order to print a fax received by Cisco Unity Express, the phone number of a fax machine must be configured.

Prerequisites

You must configure the Cisco IOS gateway for T.37 on-ramp and off-ramp fax support. See the "Configuring Your Cisco IOS Gateway for T.37 On-Ramp and Off-Ramp Fax Support" section on page 1 for more details.

To restrict specified extensions from using this feature, you must configure a restriction table as described in the "Configuring Restriction Tables" section on page 32.

Required Data for This Procedure

This procedure requires:

- IP address or hostname of the outbound fax gateway
- IP address or hostname for the inbound fax gateway
- Fax number used to print faxes

SUMMARY STEPS

1. **config t**
2. **fax gateway outbound address** {*hostname* | *ip-address*}
3. **fax gateway inbound address** {*hostname* | *ip-address*}
4. **fax print** *E.164*
5. **voice mailbox owner** *name*
6. **enable fax**
7. **end**
8. **show fax configuration**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`fax gateway outbound address`** {*hostname* | *ip-address*} **Example:** `se-10-0-0-0(config)# fax gateway outbound address 172.21.21.40`	Configures an outbound fax gateway (also known as Off-ramp). The fax subsystem uses this outbound gateway to send faxes.
Step 3	**`fax gateway inbound address`** {*hostname* | *ip-address*} **Example:** `se-10-0-0-0(config)# fax gateway inbound address 172.21.21.40`	Configures an inbound fax gateway (also known as On-ramp). The fax subsystem uses this inbound gateway to receive faxes. The system will reject any incoming faxes from any other IP Address or hostname.

	Command or Action	Purpose

Step 4	**`fax print`** *`E.164-number`*
	Example:
	`se-10-0-0-0(config)# fax print 5550112`
		Configures the system level fax number for printing the faxes.

Step 5	**`voice mailbox owner`** *`name`*
	Example:
	`se-10-0-0-0(config)# voice mailbox owner owner22`
		Creates a mailbox for the specified user and enters mailbox configuration mode.

Step 6	**`enable fax`**
	Example:
	`se-10-0-0-0(config)# enable fax`
		Enables the specified mailbox to receive faxes from a fax gateway.

Step 7	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Step 8	**`show fax configuration`**
	Example:
	`se-10-0-0-0# show fax configuration`
		(Optional) Displays the configuration for the inbound fax gateway, outbound fax gateway, and the default fax number which is used for printing faxes.

Example

The following sample configuration configures the fax parameters on a Cisco Unity Express module:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# fax gateway inbound address 172.21.21.40
se-10-0-0-0(config)# fax gateway outbound address 172.21.21.40
se-10-0-0-0(config)# fax print 5550112
se-10-0-0-0(config)# voice mailbox owner owner22
se-10-0-0-0(config)# enable fax
se-10-0-0-0(config)# end
```

The output for **show fax configuration** is similar to the following:

```
se-10-0-0-0> show fax configuration

Inbound Fax Gateway: 172.21.21.40
Outbound Fax Gateway: 172.21.21.40
Fax Printing Number: 5550112
```

Configuring SMTP Parameters

Cisco Unity Express supports various features which need to send outgoing e-mail messages. In order to send these e-mails, an external SMTP server is required.

This section describes how to configure an external SMTP server and its parameters on the Cisco Unity Express module. The SMTP server address can either be a hostname or IP address. To use a hostname, verify that the DNS server is configured.

If the SMTP server requires authentication, you must also provide the user ID and password of a valid user account on the SMTP server.

Configuring an SMTP Server

Use the following procedure to configure an SMTP server and its parameters in Cisco Unity Express configuration mode.

Required Data for This Procedure

- SMTP server hostname or IP address
- (Optional) SMTP port number
- SMTP authentication parameters (user ID and password, or credential string)

SUMMARY STEPS

1. **config t**
2. **smtp server address** {*hostname* | *ip-address*} [**port** *port*] **authentication** {**none** | **username** *userid* **password** *password* | **credentials** *credential-string*}
3. **end**
4. **show smtp server**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** se-10-0-0-0# config t	Enters configuration mode.
Step 2	**smtp server address** {*hostname* | *ip-address*} [**port** *port*] **authentication** {**none** | **username** *userid* **password** *password* | **credentials** *credential-string*} **Example:** se-10-0-0-0(config)# smtp server address 10.10.5.5 authentication none se-10-0-0-0(config)# smtp server address mainsmtp authentication username smtp123 password pwd123 se-10-0-0-0(config)# smtp server address 172.16.1.1 authentication credentials 3CmyKjEFhzkjd8QxCVjv552jZsjj zh3bSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0 nfGWTYHfmPSd8ZZNgd	Configures an SMTP server, which is required for sending outbound e-mails. • *hostname*—Hostname of the SMTP server. • *ip-address*—IP address of the SMTP server. • **port**—SMTP server port number. The default port number is 25. • **none**—Indicates that the SMTP server does not require authentication. • *userid*—User ID of a valid user account on the SMTP server. • *password*— Password of a valid user account on the SMTP server. • *credential-string*—Authentication credential string for the SMTP server. Copy and paste this string from the running or startup configuration.
Step 3	**end**	Returns to privileged EXEC mode.
Step 4	**show smtp server** **Example:** se-10-0-0-0# show smtp server	Displays the SMTP server settings.

Example

The following is sample output of the **show smtp server** command.

```
se-10-0-0-0# show smtp server

SMTP Server: 172.16.0.1
SMTP Port: 465
Authentication: Required
Username: cisco
Security: ssl
```

Configuring SMTP Server Security

Beginning with Cisco Unity Express 8.6, you can configure the SMTP server security setting.

Prerequisite

Cisco Unity Express 8.6 or later versions

SUMMARY STEPS

1. **config t**
2. **smtp server security** {**ssl** | **starttls**}
3. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`smtp server security`** `{`**`ssl`** `|` **`starttls`**`}`
	Example:
	`se-10-0-0-0(config)# smtp server security ssl`
		Configures the security settings for the SMTP server.
		If you configure this setting, you must configure the port number for the **smtp server address** command to the following:
		• SSL—port 465
		• STARTTLS—port 587

Configuring Historical Reporting

Starting with Cisco Unity Express 3.0, information and statistics related to call and application events can be saved in a historical reporting database on the module. This historical data can later be used to generate various types of usage reports using the Cisco Unified Communications Express Historical Reporting Client.

Collection of historical data is disabled by default. You must enable it before the system starts saving these statistics in the reporting database. However, if an IVR license is purchased and installed on the module, the collection of historical data gets automatically enabled.

The number of days of historical data that can be stored depends on the Cisco Unity Express hardware. For more information, see the *Release Notes for Cisco Unity Express*. The historical reporting maintenance components consist of a database purging service that periodically removes any data older than this.

A special privilege is required for a user to be able to log in to the Cisco Unified Communications Express Historical Reporting Client software and view historical reports.

The following sections describe the procedures for configuring historical reporting parameters:

- Configuring the Local Historical Reporting Database, page 64
- Configuring the Database Purge Schedule, page 66
- Configuring the Database Capacity Threshold for a Purge, page 68

- Configuring the Database Threshold Capacity for Warning Notification, page 69
- Configuring the Purge Notification E-mail Addresses, page 71
- Manually Purging the Historical Reporting Database, page 72
- Exporting Historical Report Data to an External Server, page 74
- Assigning Historical Report Viewing Privileges to a Group, page 76

Configuring the Local Historical Reporting Database

Historical reporting data is stored in a local (internal) database. Use the **database local** command to configure storage of historical statistics on the local or internal database.

The **no** and **default** forms of this command have no effect.

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **config t**
2. **ccn reporting historical**
3. **database local**
4. **description** *text*
5. **enabled**
6. **end**
7. **show ccn reporting historical**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters global configuration mode.

Step 2	**`ccn reporting historical`**
	Example:
	`se-10-0-0-0(config)# ccn reporting historical`
	`se-10-0-0-0(config-hrdm)#`
		Enters historical reporting database configuration mode.

Step 3	**`database local`**
	Example:
	`se-10-0-0-0(config-hrdm)# database local`
		Configures local database to log historical statistics for reporting. This command is for future use.

	Command or Action	Purpose

Step 4	**`description`** *`word`*
	Example:
	`se-10-0-0-0(config-hrdm)# description "Chicago office database"`
		(Optional) Sets the description for the historical reporting database. Use quotes around the text.
		The default value of the description is the hostname of the Cisco Unity Express system. The **no** and **default** forms of this command set the description value to the configured hostname of the system.

Step 5	**`enabled`**
	Example:
	`se-10-0-0-0(config-hrdm)#` **`enabled`**
		Enables historical reporting. The collection of historical data is disabled by default. You must enable it before the system starts saving these statistics in the reporting database. However, if an IVR license is purchased and installed on the module, the collection of historical data is automatically enabled
		Use the **no** form of this command to disable the historical reporting database. If the historical reporting database is disabled, call-related events are not stored in the database. Use the **default** form of this command to enable the database.

Step 6	**`end`**
	Example:
	`se-10-0-0-0(config-hrdm)# end`
		Saves and returns to privileged EXEC mode.

Step 7	**`show ccn reporting historical`**
	Example:
	`se-10-0-0-0# show ccn reporting historical`
		Displays the historical reporting database parameters.

Examples

Following is example output of the **show ccn reporting historical** command:

```
se-10-0-0-0# show ccn reporting historical

Database Information
--------------------
Enabled    : Yes
Description: Chicago office database
DB Usage: 50%
Current Maintenance Status: idle

Purge Schedule
--------------
Daily Time: 4:00 AM
Data older than 365 days will be purged
Date of last completed purge:

Purge Capacity Configuration
----------------------------
Email Address:  abcd@domain.com
Warning Capacity: 65%
Purge Capacity: 75%
Oldest Days to purge: 7
```

Configuring the Database Purge Schedule

Use the **purge schedule** command in historical reporting database configuration mode to update the daily schedule for automatic purging of historical data.

A daily purge starts at the time of day specified (in hours:minutes 24-hour format). Stored data that is older than that specified in the *days-to-keep* value (in days) is purged from the database starting daily at the time specified.

The default purge schedule is set at 04:00.

Note Because the purging of historical data on the module is resource-intensive, we recommend that the purge be scheduled to run during off-peak hours.

The default number of days is 90 for the AIM-CUE/AIM2-CUE and 365 for the NM-CUE-EC,NM-CUE, NME-CUE, ISM-SRE-300-K9, SM-SRE-700-K9, SM-SRE-710-K9, SM-SRE-900-K9, and SM-SRE-910-K9 modules. The maximum value you can specify for *days-to-keep* is summarized in Table 5-3. The **no** and **default** form of this command sets the purge scheduled time to 04:00, and the number of days to the default value for that particular system hardware module.

Table 5-3 Maximum Days-to-Keep Value

Database	Storage Limits
AIM-CUE/AIM2-CUE	90 days or database 90% full
NM-CUE-EC, NM-CUE, NME-CUE, ISM-SRE-300-K9 SM-SRE-700-K9 SM-SRE-710-K9 SM-SRE-900-K9 SM-SRE-910-K9	365 days or database 90% full

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **config t**
2. **ccn reporting historical**
3. **purge schedule time** *hh:mm* **days-to-keep** *days*
4. **end**
5. **show ccn reporting historical**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters global configuration mode.

Step 2	**ccn reporting historical**
	Example:
	`se-10-0-0-0(config)# ccn reporting historical`
	`se-10-0-0-0(config-hrdm)#`
		Enters historical reporting database configuration mode.

Step 3	**purge schedule time** *hh:mm* **days-to-keep** *days* **Example:** `se-10-0-0-0(config-hrdm)# purge schedule time 04:00 days-to-keep 30`	Configures the daily purge schedule and the number of days of this historical data to retain data older than the specified days-to-keep value will get purged at the scheduled time.

Step 4	**end**
	Example:
	`se-10-0-0-0(config-hrdm)# end`
		Saves and returns to privileged EXEC mode.

Step 5	**show ccn reporting historical** **Example:** `se-10-0-0-0# show ccn reporting historical`	Displays the historical reporting database parameters.

Examples

Following is example output of the **show ccn reporting historical** command:

```
se-10-0-0-0# show ccn reporting historical

Database Information
--------------------
Enabled    : Yes
Description: Chicago office database
DB Usage: 50%
Current Maintenance Status: idle

Purge Schedule
--------------
Daily Time: 5:00 AM
Data older than 30 days will be purged
Date of last completed purge:

Purge Capacity Configuration
----------------------------
Email Address:  abcd@domain.com
Warning Capacity: 65%
Purge Capacity: 75%
```

Configuring the Database Capacity Threshold for a Purge

Use the **purge purge-capacity** command in historical reporting database configuration mode to set the purge threshold as a percentage of the total database capacity and the number of days of historical data that is to be purged from the database.

When the database capacity reaches the configured threshold, historical data older than the configured *days-to-purge* value is removed from the database. The default purge capacity percentage is 90, and the *days-to-purge* default value is 7. The maximum purge capacity percentage value allowed is 90. The **no** and **default** form of this command sets the purge capacity percentage value to 90, and the number of *days-to-purge* to 7.

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **config t**
2. **ccn reporting historical**
3. **purge purge-capacity percentage** *percent* **days-to-purge** *days*
4. **end**
5. **show ccn reporting historical**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters global configuration mode.

Step 2	**`ccn reporting historical`**
	Example:
	`se-10-0-0-0(config)# ccn reporting historical`
	`se-10-0-0-0(config-hrdm)#`
		Enters historical reporting database configuration mode.

Step 3	**`purge purge-capacity percentage`** *`percent`* **`days-to-purge`** *`days`*
	Example:
	`se-10-0-0-0(config-hrdm)# purge purge-capacity percentage 95 days-to-purge 7`
		Configures the purge capacity threshold and the number of days of historical data to be purged from the database.

	Command or Action	Purpose

Step 4	**end**
	Example:
	`se-10-0-0-0(config-hrdm)# end`
		Saves and returns to privileged EXEC mode.

Step 5	**show ccn reporting historical** **Example:** `se-10-0-0-0# show ccn reporting historical`	Displays the historical reporting database parameters.

Examples

Following is example output of the **show ccn reporting historical** command:

```
se-10-0-0-0# show ccn reporting historical

Database Information
--------------------
Enabled    : Yes
Description: Chicago office database
DB Usage: 50%
Current Maintenance Status: idle

Purge Schedule
--------------
Daily Time: 5:00 AM
Data older than 30 days will be purged
Date of last completed purge:

Purge Capacity Configuration
----------------------------
Email Address:  abcd@domain.com
Warning Capacity: 65%
Purge Capacity: 75%
```

Configuring the Database Threshold Capacity for Warning Notification

Use the **purge warning-capacity** command to configure a percentage value of the total database capacity that, when reached, causes the system to send an e-mail message warning that the database capacity is approaching its limit. To configure the e-mail address to which this warning message gets sent, see the "Configuring the Purge Notification E-mail Addresses" section on page 71.

The default warning capacity percentage is 85. The maximum warning capacity percentage value allowed is 90. The **no** and **default** forms of this command set the warning capacity to 85%.

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **config t**

2. **ccn reporting historical**
3. **purge warning-capacity percentage** *percent*
4. **end**
5. **show ccn reporting historical**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters global configuration mode.

Step 2	**`ccn reporting historical`**
	Example:
	`se-10-0-0-0(config)# ccn reporting historical`
	`se-10-0-0-0(config-hrdm)#`
		Enters historical reporting database configuration mode.

Step 3	**`purge warning-capacity percentage`** *`percent`*
	Example:
	`se-10-0-0-0(config-hrdm)# purge warning-capacity percentage 65`
		Configures the percentage value of the total database capacity that, when reached, causes the system to send an e-mail message warning that the database capacity is approaching its limit.

Step 4	**`end`**
	Example:
	`se-10-0-0-0(config-hrdm)# end`
		Saves and returns to privileged EXEC mode.

Step 5	**`show ccn reporting historical`**
	Example:
	`se-10-0-0-0# show ccn reporting historical`
		Displays the historical reporting database parameters.

Examples

Following is example output of the **show ccn reporting historical** command:

```
se-10-0-0-0# show ccn reporting historical

Database Information
--------------------
Enabled    : Yes
Description: Chicago office database
DB Usage: 50%
Current Maintenance Status: idle

Purge Schedule
--------------
Daily Time: 5:00 AM
Data older than 30 days will be purged
Date of last completed purge: Fri Feb 10 22:00:00 EST
```

```
Purge Capacity Configuration
----------------------------
Email Address:  abcd@domain.com
Warning Capacity: 65%
Purge Capacity: 75%
```

Configuring the Purge Notification E-mail Addresses

Use the **purge notification** command to configure e-mail addresses of up to 255 characters in length, to which purge notification and warning messages are sent.

There is no default e-mail address. If an e-mail address is not configured, e-mail notifications are not sent.

If more than one e-mail address must be configured, enter the e-mail addresses separated by commas without spaces.

Use the **no** and **default** forms of this command to remove this configuration.

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **config t**
2. **ccn reporting historical**
3. **purge notification email address** *email-address*
4. **end**
5. **show ccn reporting historical**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters global configuration mode.

Step 2	**ccn reporting historical**
	Example:
	`se-10-0-0-0(config)# ccn reporting historical`
	`se-10-0-0-0(config-hrdm)#`
		Enters historical reporting database configuration mode.

Step 3	**purge notification email address** *email-address* **Example:** `se-10-0-0-0(config-hrdm)# purge notification email address abcd@efghij.com`	Configures an e-mail address or e-mail addresses, to which purge notification and warning messages are sent.

	Command or Action	Purpose

Step 4	**end**
	
	Example:
	`se-10-0-0-0(config-hrdm)# end`
		Saves and returns to privileged EXEC mode.

Step 5	**show ccn reporting historical** **Example:** `se-10-0-0-0# show ccn reporting historical`	Displays the historical reporting database parameters.

Examples

Following is example output of the **show ccn reporting historical** command:

```
se-10-0-0-0# show ccn reporting historical

Database Information
--------------------
Enabled    : Yes
Description: Chicago office database
DB Usage: 50%
Current Maintenance Status: idle

Purge Schedule
--------------
Daily Time: 5:00 AM
Data older than 30 days will be purged
Date of last completed purge: Fri Feb 10 22:00:00 EST

Purge Capacity Configuration
----------------------------
Email Address:  abcd@domain.com
Warning Capacity: 65%
Purge Capacity: 75%
```

Manually Purging the Historical Reporting Database

Use the **purge now** command to initiate a manual purge of the historical reporting database and remove historical data older than the specified *days-to-keep* number of days.

When the database is purged, historical data older than the specified *days-to-keep* value (in the range of 1–1000 days) is removed from the database. The *days-to-keep* value is required to initiate a manual purge.

Note Because the purging of historical data on the module is resource-intensive, we recommend that the manual purge be done during off-peak hours.

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **ccn reporting historical purge now days-to-keep** *days*
2. **show ccn reporting historical**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**ccn reporting historical purge now days-to-keep** *days* **Example:** `se-10-0-0-0(config)# ccn reporting historical purge now days-to-keep 30`	Manually purges the historical reporting database and removes historical data older than the *days-to-keep* number of days.
Step 2	**show ccn reporting historical** **Example:** `se-10-0-0-0# show ccn reporting historical`	Displays the historical reporting database parameters.

Examples

The following example illustrates the output when the database is manually purged:

```
se-10-0-0-0# ccn reporting historical purge now days-to-keep 7
Historical Database Purge Initiated
-----------------------------------
Time:  Fri Feb 10 04:00:00 EST
Data older than [ 7 ] days will be purged
```

The following example illustrates the **show ccn reporting historical** output:

```
se-10-0-0-0# show ccn reporting historical

Database Information
--------------------
Enabled    : Yes
Description: Chicago office database
DB Usage: 50%
Current Maintenance Status: idle

Purge Schedule
--------------
Daily Time: 5:00 AM
Data older than 30 days will be purged
Date of last completed purge: Fri Feb 10 22:00:00 EST

Purge Capacity Configuration
----------------------------
Email Address:  abcd@domain.com
Warning Capacity: 65%
Purge Capacity: 75%
```

Exporting Historical Report Data to an External Server

You can export historical reporting call contact detailed records (CCDRs) to an external server from the Cisco Unity Express module for postprocessing. Use the **copy hrdb url** command to export ASCII comma separated values of the historical data to an external server as a flat file.

Note We recommend that this command be executed during off peak hours or when the system is in a quiescent state.

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **copy hrdb url** *url*

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`copy hrdb url`** *`url`*
	
	Example:
	`se-10-0-0-0# copy hrdb url ftp://1.2.3.4/hr.txt`
	`% Total % Received % Xferd Average Speed Time Time Time`
	`Current`
	
	`Dload Upload Total Spent Left Speed`
	
	`100 3584k 0 0 0 3584k 0 1259k --:--:-- 0:00:02 --:--:--`
	`1794k`
	`se-10-0-0-0#`
		Copies and uploads the historical reporting data in ASCII comma separated value format from the module to the specified URL.

Examples

The following are output examples of ASCII files formatted as comma separated values (CSVs) that are uploaded to the external server:

```
1,0,0,1,2,3,-1,1001,2,-1,16904,2007-05-30 13:19:34.032,2007-05-30
13:19:41.357,-240,6666,6666,15000000001,2,voicemail,7,C3E380E8-E0811DC-8295BE88-935E7691@1
92.1.1.110,,,,,,,,,,
2,0,0,1,2,3,-1,1001,2,-1,16912,2007-05-30 13:19:44.197,2007-05-30
13:19:47.194,-240,6666,6666,15000000002,2,voicemail,2,CAEC0AEE-E0811DC-8299BE88-935E7691@1
92.1.1.110,,,,,,,,,,

3,0,0,1,2,3,-1,1001,2,-1,16902,2007-05-30 13:19:55.992,2007-05-30
13:19:59.575,-240,6666,6666,15000000003,2,voicemail,3,D1F49256-E0811DC-829DBE88-935E7691@1
92.1.1.110,,,,,,,,,,
```

Call contact detailed records (CCDRs) column fields described in Table 5-4 are listed sequentially in the ASCII CSV files :

You can define the custom variables 1 through 10 to suit your needs.

Table 5-4 Call Contact Detailed Records (CCDRs) Descriptions

Field Name	Data Type	Required Field	Possible Values	Description
sessionID	decimal(28)	NOT NULL		When a caller calls into the system, a unique session ID is established. This session ID is used for entire call, through all conferences and transfers.
sessionSeqNum	smallint	NOT NULL	[0, 1, 2, 3, …]	Each transfer of a call creates a new sequence number, but the session ID remains the same.
profileID	int	NOT NULL		Always set to 0 (reserved for future use).
contactType	tinyint	NOT NULL	1 = incoming 2 = outgoing 3 = internal	Incoming calls are those calls coming into the system. Outgoing call are calls originated by the Cisco Unity Express system. Internal calls are transfers.
contactDisposition	tinyint	NOT NULL	1 = abandoned 2 = handled	The call was either processed or abandoned during this part of the call.
originatorType	tinyint	NOT NULL	2= device 3= unknown	Device indicates call was originated by the CTI port. Unknown device includes gateway.
originatorID	int	NULL	CTI port, NULL	For gateway or unknown originator type, the value is NULL.
originatorDN	nvarchar(30)	NULL		Call ANI, the telephone number of the originator of the caller. For gateway or unknown originator type, the value is NULL.
destinationType	smallint	NULL	2 = device 3= unknown	Device indicates call was presented to a CTI port. Unknown device includes gateway.
destinationID	int	NULL	CTI port, NULL	For gateway or unknown destination type, the value is NULL.
destinationDN	nvarchar(30)	NULL		For gateway or unknown destination type, the value is NULL.
startDateTime	datetime	NOT NULL		Start date and time when this call leg was connected.
endDateTime	datetime	NOT NULL		End date and time when this call leg was transferred or disconnected.
gmtOffset	smallint	NOT NULL		DST adjusted offset.
calledNumber	nvarchar(30)	NOT NULL		If the call was a transfer, this is the number to which the call was transferred. In other cases, this information is the same as the Original Called Number.
origCalledNumber	nvarchar(30)	NOT NULL		Telephone number the caller originally dialed.
applicationTaskID	decimal(28)	NULL		Task ID of currently executing application.

Table 5-4 Call Contact Detailed Records (CCDRs) Descriptions (continued)

Field Name	Data Type	Required Field	Possible Values	Description
applicationID	int	NULL		Unique identifier of the application that processed this call.
applicationName	nvarchar(30)	NULL		Application name that processed this call.
connectTime	smallint	NULL		Number of seconds for which this call leg was in answered or connected state.
callID	varchar(64)			Globally unique Call ID
customVariable1	varchar (40)	NULL		Contents of the first custom variable of the currently executing application.
customVariable2	varchar (40)	NULL		Contents of the second custom variable of the currently executing application.
customVariable3	varchar (40)	NULL		Contents of the third custom variable of the currently executing application.
customVariable4	varchar (40)	NULL		Contents of the fourth custom variable of the currently executing application.
customVariable5	varchar (40)	NULL		Contents of the fifth custom variable of the currently executing application.
customVariable6	varchar (40)	NULL		Contents of the sixth custom variable of the currently executing application.
customVariable7	varchar (40)	NULL		Contents of the seventh custom variable of the currently executing application.
customVariable8	varchar (40)	NULL		Contents of the eighth custom variable of the currently executing application.
customVariable9	varchar (40)	NULL		Contents of the ninth custom variable of the currently executing application.
customVariable10	varchar (256)	NULL		Contents of the tenth custom variable of the currently executing application.

Assigning Historical Report Viewing Privileges to a Group

A special privilege is required for a user to be able to log in to the Cisco Unified Communications Manager Express Historical Reporting Client software and view historical reports. The name of the privilege required for this purpose is ViewHistoricalReports. All members of the group, which has this privilege, are able to view historical reports. See the "Configuring Privileges" section on page 11 for details on assigning privileges.

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **config t**
2. **groupname** *name* **privilege ViewHistoricalReports**

3. **end**
4. **show** *groupname* **privileges**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters global configuration mode.
Step 2	**groupname** *name* **privilege ViewHistoricalReports** **Example:** `se-10-0-0-0(config)# groupname myGroup privilege ViewHistoricalReports`	Allows the specified group name to view historical statistics reports.

Step 3	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Saves and returns to privileged EXEC mode.

Step 4	**show** *groupname* **privileges** **Example:** `se-10-0-0-0# show ccn groupname`	Displays the privileges set for the specified group names.

Examples

An example of the sequence of commands for assigning historical report viewing privilege is as follows:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# groupname my_group privilege ViewHistoricalReports
se-10-0-0-0(config)# end
se-10-0-0-0# show groups privileges
```

Banner Support

This section describes how to configure a system wide login banner that is displayed to all users when they log in to the CLI or GUI and prompts the user for credentials.

The login banner may contain only plain text (no special formatting) and cannot be larger than 1944 characters (24 lines, with 80 characters each, plus a new line character). The same banner text is display whether the user logs in to the CLI or GUI and whether the banner is configured using the CLI or GUI.

For the CLI, the login banner is displayed only when the console login is configured to challenge the user for credentials before connecting to the CUE console. If a console session is resumed, no banner is displayed. A user can be resume a console session when they disconnect from the console with telnet without out first using the **exit** or **end** command to log off.

Use the **banner login** command to configure the login banner. This command requires a delimiter character that signals the end of banner content input. The delimiter character can be any printable character except ? and “. You cannot use the delimiter character in the banner content. Otherwise, the banner input is ended prematurely.

The **banner login** command is a multi-line command and can accept more than one line for the banner-content. You can include the following tokens in the banner-content to represent system settings.

token	Information displayed in the banner
$(hostname)	Displays the hostname for the module.
$(domain)	Displays the domain for the module.

If you enter a banner that exceeds the allowed length, the command stops accepting input, truncates the message at the maximum length, outputs an error message, and returns to global configuration.

You can configure the login banner from either the CLI or the GUI to prompt the user for credentials. You can also disable the login banner so that user are not prompted to enter credentials.

Defining a Login Banner

Prerequisites

Cisco Unity Express 3.2 or a later version

SUMMARY STEPS

1. **config t**
2. **banner login** *delimiter-char banner-content delimiter-char*
3. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

	Command or Action	Purpose

Step 2	**`banner login`** *`delimiter-char banner-content delimiter-char`*
	Example:
	`se-10-0-0-0(config)# banner login %`
	`Enter TEXT message.  End with the character '%'.`
	`    Welcome to $(hostname)%`
		Configures the login banner:
		delimiter-character—Character that indicates the beginning and end of of the banner text.
		banner-content—Text content of the banner.

Step 3	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Examples

The following example configures the banner login to "Welcome to *hostname*:"

```
se-10-0-0-0# config t
se-10-0-0-0 (config)# banner login %
Enter TEXT message.  End with the character '%'.
    Welcome to $(hostname)%
se-10-0-0-0 (config)# exit
```

The following example configures the banner login to "Welcome to *hostname*.somewhere.com, enjoy:"

```
se-10-0-0-0# config t
se-10-0-0-0 (config)# ip domain-name somewhere.com
se-10-0-0-0 (config)# banner login @
Enter TEXT message.  End with the character '@'.
Welcome to $(hostname).$(domain), enjoy!
@
se-10-0-0-0 (config)# exit
```

The following example configures the banner login to:

```
-----------------------------------
You have entered a restricted area.
Unauthorized access is prohibited.
-----------------------------------

se-10-0-0-0# config t
se-10-0-0-0 (config)# banner login 1
Enter TEXT message.  End with the character '1'.
-----------------------------------
You have entered a restricted area.
Unauthorized access is prohibited.
-----------------------------------
1
se-10-0-0-0 (config)# exit
```

CHAPTER 6

Configuring Users and Groups

All configuration and administration functions for Cisco Unity Express are available through the graphical user interface (GUI). However, you may find using the command-line interface (CLI) is more efficient than using the GUI. For example, you may want to create a script to configure a large number of subscribers for a specific system. In this case, the CLI can be more efficient.

This chapter describes the commands for the following tasks and contains the following sections:

- Prerequisites, page 1
- Adding and Modifying a User, page 1
- Adding and Modifying a Group, page 7
- Configuring Privileges, page 11

Prerequisites

Verify that the telephones and extensions connected to the Cisco Unified CME router or Cisco Unified Communications Manager server are configured. If you have not completed the configuration, see your Cisco Unified Communications Manager administrator guide or Cisco Unified CME administrator guide for the procedures.

Adding and Modifying a User

Users, or subscribers, configured in Cisco Unified CME or Cisco Unified Communications Manager can be imported to the Cisco Unity Express database.

- Cisco Unity Express does *not* automatically synchronize its database with the Cisco Unified Communications Manager database. If a subscriber defined in Cisco Unity Express must be in the Cisco Unified Communications Manager database, go back to Cisco Unified Communications Manager later and define the subscriber there.

Note If you change a Cisco Unified CME user's password on Cisco Unity Express with Configure --> Users, the password for that user is updated on Cisco Unified CME. However, the reverse is not true: a user password changed on Cisco Unified CME will not be updated to Cisco Unity Express.

- To synchronize the Cisco Unity Express and Cisco Unified CME databases, use the Cisco Unity Express GUI option **Administration > Synchronize Information**.

The procedure described in this section allows you to create a new user in the system. Use the same procedures to modify an existing user's properties.

Cisco Unity Express supports twice as many users as mailboxes. Some subscribers, such as system administrators, might not be assigned a voice mailbox. The maximum number of users is determined by the license of the module. See "Recording a Prompt File" on page 29 for the maximum number of users permitted for your module.

Required Data for This Procedure

The following information is required for adding or modifying a user:

- Username—The user ID. The username must be at least 3 and no more than 32 characters. Cisco Unity Express allows only letters, numbers, underscore (_), dot (.), and dash (-) in user IDs. User IDs must start with a letter. Do not use spaces in the username.
- (Optional) Full name—First and last name of the subscriber. It must start and end with quotation marks (" ").
- (Optional) Group—Name of an existing group in which this subscriber is a member.
- (Optional) Password—Password for logging into the Cisco Unity Express GUI. The password must be at least 3 and no more than 32 characters. Spaces are not allowed.
- (Optional) PIN—Personal identification number for logging into the TUI. The PIN must be at least 3 and no more than 16 digits.

Note To configure PINless voice mail, see "Configuring PINless Mailbox Access" on page 13.

SUMMARY STEPS

EXEC mode:

1. **username** *userid* [**create** | **delete** | **fullname** [**first** "*first-name*" | **last** "*last-name*" | **display** "*full-name*"] | **group** *group-name* | **language** "*language*"| **password** "*password*" | **pin** *number*]
2. **show users**
   or
   show user detail username *userid*
3. **copy running-config startup-config**

Configuration mode:

1. **config t**
2. **username** *userid* [**create** | **phonenumber** *phone-number* | **phonenumberE164** *full-number*]
3. **exit**
4. **show users**
   or
   show user detail username *userid*

5. **copy running-config startup-config**

DETAILED STEPS

EXEC mode:

	Command or Action	Purpose

Step 1	**username** *userid* [**create** | **delete** | **fullname** [**first** "*first-name*" | **last** "*last-name*" | **display** "*full-name*"] | **group** *group-name* | **language** “*language*” | **password** "*password*" | **pin** *number*]
	Example:
	`se-10-0-0-0# username user1 create`
	`se-10-0-0-0# username user2 fullname display “User 2”`
	`se-10-0-0-0# username user2 group sales`
	`se-10-0-0-0# username user2 password “green”`
	`se-10-0-0-0# username user2 pin 4444`
	`se-10-0-0-0# username user2 delete`
		Creates the subscriber with the specified user ID. The optional parameters configure more information for the subscriber:
		• *userid*—User ID of the subscriber. The user ID must be at least 2 and no more than 31 characters. Cisco Unity Express allows only letters, numbers, underscore (_), dot (.), and dash (-) in user IDs. Do not use spaces in the username. User IDs must start with a letter.
		• **create**—Creates the subscriber with no other information.
		• **delete**—Deletes an existing subscriber.
		• **fullname**—Specifies a full name for this subscriber. This full name appears on telephone displays.
		• **group**—Associates this subscriber with an existing group.
		• **language**—Specifies the default language used for the specified user. See the *Release Notes for Cisco Unity Express* for a list of available languages.
		• **password**—Specifies a password for this subscriber. The *password* value must be entered within quotation marks (“ ”). Spaces are not allowed. Acceptable password characters are lowercase letters a to z, uppercase letters A to Z, digits 0 to 9, and the following symbols: - , . + = _ ! @ # $ ^ * ( ) ? / ~ < > & %.
		• **pin**—Specifies a personal identification number (PIN) for this subscriber. The subscriber enters this number from the telephone when accessing the voice-mail system. The PIN can contain a maximum number of 16 digits. The asterisk (*) and pound sign (#) cannot be used.

	Command or Action	Purpose
Step 2	**show users** or **show user detail username** *userid* **Example:** se-10-0-0-0# **show user detail username user2**	Displays a list of user IDs for all subscribers configured on the system. or Displays the detailed information configured for the specified subscriber.
Step 3	**copy running-config startup-config** **Example:** se-10-0-0-0# **copy running-config startup-config**	Copies the configuration changes to the startup configuration.

Examples

The following output illustrates the **show users** and **show user detail username** commands:

```
se-10-0-0-0# show users
user1
user2

se-10-0-0-0# show user detail username user2
Full Name:          User 2
First Name:
Last Name:          user2
Nickname:           user2
Phone:
Phone(E.164):
Language:           en_ENU
se-10-0-0-0#
```

Configuration mode:

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`username`** *`userid`* `[`**`create`** | **`phonenumber`** *`phone-number`* | **`phonenumberE164`** *`full-number`*`]`
	Example:
	`se-10-0-0-0(config)#` **`username user3 create`**
	`se-10-0-0-0(config)#` **`username user3 phonenumber 50180`**
	`se-10-0-0-0(config)#` **`username user3 phonenumberE164 13335550180`**
		Creates the subscriber with the specified user ID. The optional parameters configure more information for the subscriber:
		• *userid*—User ID of the subscriber. The user ID must be at least 2 and no more than 31 characters. Cisco Unity Express allows only letters, numbers, underscore (_), dot (.), and dash (-) in user IDs. Do not use spaces in the username. User IDs must start with a letter.
		• **create**—Creates the subscriber with no other information.
		• **phonenumber**—Specifies a number or extension for this subscriber. Spaces or dashes are not allowed.
		• **phonenumberE164**—Specifies a telephone number with area code for this subscriber. Spaces or dashes are not allowed.

Step 3	**`exit`**
	Example:
	`se-10-0-0-0(config)# exit`
		Exits configuration mode.

Step 4	**`show users`**
	or
	`show user detail username` *`userid`*
	Example:
	`se-10-0-0-0#` **`show user detail username user2`**
		Displays a list of user IDs for all subscribers configured on the system.
		or
		Displays the detailed information configured for the specified subscriber.

Step 5	**`copy running-config startup-config`**
	Example:
	`se-10-0-0-0#` **`copy running-config startup-config`**
		Copies the configuration changes to the startup configuration.

Examples

The following example illustrates configuring a subscriber and the output from the **show** commands:

```
se-10-0-0-0(config)# username user3 create
se-10-0-0-0(config)# username user3 phonenumber 50180
se-10-0-0-0(config)# exit
se-10-0-0-0# show users
```

```
user1
user2
user3
se-10-0-0-0# show user detail username user3
Full Name:          User 3
First Name:
Last Name:          user3
Nickname:           user3
Phone:              50180
Phone(E.164):
Language:           en_ENU
```

Adding and Modifying a Group

A group is a collection of subscribers, usually with a common function or purpose, such as sales, main office, customer service, or technicians. A group has the following characteristics:

- Members of the group can be individual subscribers or other groups.
- The group is assigned an extension.
- The group can have a mailbox assigned to it.
- A group can have zero or more subscribers as owners. An owner of a group can add and delete members. Additionally, an owner can add and delete other owners to the group.
- Members can belong to more than one group.
- Members can be added to the group using the configuration mode **groupname** command or using the EXEC mode **username** command. See "Adding and Modifying a User" on page 1 for details about the **username** command.

Note Subscribers must exist before being added to a group. See "Adding and Modifying a User" on page 1 to configure the subscriber's detailed information.

- Only members have access to the messages in a group's voice mailbox. The owner is not considered a member of the group. If the owner needs to access the group's mailbox, add the owner as a member of the group. (The owner's name appears twice in the group, once as a member and once as the owner.)
- A group can be assigned a privilege level. The privilege level permits the members of the group to access all or a restricted set of administrative functions. Use the **show privileges** command to display the privilege levels installed on your system. Use the **show groups privileges** command to display the privileges assigned to each group. See "Configuring Privileges" on page 11 for more information about privilege levels.

See "Recording a Prompt File" on page 29 for the maximum number of groups, owners, and members permitted on your system.

The following procedure allows you to create a new group in the system.

Required Data for This Procedure

The following information is required to define a group:

- EXEC mode:

- Name of group
- (Optional) Description of group
- (Optional) Full name of group

- Configuration mode:
  - Name of group
  - (Optional) One or more existing user or group IDs to be added as members
  - (Optional) One or more existing user IDs to be added as owners
  - (Optional) Extension or telephone number of the group
  - (Optional) Full E.164 telephone number of the group
  - (Optional) Privilege level for the group

SUMMARY STEPS

EXEC mode:

1. **groupname** *userid* [**create** | **delete** | **description** "*description*" | **fullname** "*full-name*"]
2. **show groups**
   or
   show group detail groupname *groupid*
3. **copy running-config startup-config**

Configuration mode:

1. **config t**
2. **groupname** *groupid* [**member** *username* | **owner** *ownername* | **phonenumber** *phone-number* | **phonenumberE164** *full-number* | **privilege** *privilege-id*]
3. **exit**
4. **show groups**
   or
   show group detail groupname *groupid*
5. **copy running-config startup-config**

DETAILED STEPS

EXEC mode:

	Command or Action	Purpose

Step 1	**`groupname`** *`groupid`* [**`create`** | **`delete`** | **`description`** “*`description`*” | **`fullname`** “*`full-name`*”]
	Example:
	`se-10-0-0-0#` **`groupname sales fullname “Sales Department”`**
	`se-10-0-0-0#` **`groupname sales description “Retail Sales Department”`**
	`se-10-0-0-0#` **`groupname sales delete`**
		Creates the group with the *groupid* value. The optional parameters configure more information for the group:
		• **create**—Creates the group with no other information.
		• **delete**—Deletes an existing group.
		• **description**—Specifies a description of the group.
		• **fullname**—Specifies a long name for the group.

Step 2	**`show groups`**
	or
	`show group detail groupname` *`groupid`*
	Example:
	`se-10-0-0-0#` **`show group detail groupname sales`**
		Displays a list of group IDs for all configured groups. This command does not display the details for the groups.
		or
		Displays the detailed configuration information for the group *groupid* value.

Step 3	**`copy running-config startup-config`**
	Example:
	`se-10-0-0-0#` **`copy running-config startup-config`**
		Copies the configuration changes to the startup configuration.

Examples

The following example creates a group and displays the output of the **show** commands:

```
se-10-0-0-0# groupname sales fullname "Sales Department"
se-10-0-0-0# groupname sales description "CA office"

se-10-0-0-0# show groups
Administrators
sales

se-10-0-0-0# show group detail groupname sales
Full Name:          Sales Department
Description:        CA office
Phone:
Phone(E.164):
Language:           en_ENU
Owners:
Members:
se-10-0-0-0#
```

Configuration mode:

	Command or Action	Purpose

Step 1	**`config t`**
	
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**groupname** *groupid* [**member** ***username*** | **owner** ***ownername*** | **phonenumber** ***phone-number*** | **phonenumberE164** ***full-number*** | **privilege** ***privilege-id***]
	
	Example:
	`se-10-0-0-0(config)#` **`groupname sales member user1`**
	`se-10-0-0-0(config)#` **`groupname sales owner user2`**
	`se-10-0-0-0(config)#` **`groupname sales phonenumber 50163`**
	`se-10-0-0-0(config)#` **`groupname sales phonenumberE164 14445550163`**
	`se-10-0-0-0(config)#` **`groupname sales privilege ManagePrompts`**
		Creates the group with the *groupid* value. The optional parameters configure more information for the user:
		• **member**—Associates an existing subscriber as a member of this group. Repeat this command to assign multiple subscribers to the group.
		• **owner**—Specifies the owner of the group. The owner is not considered a member. If the owner is to have access to the group's voice mailbox, also assign the owner as a member.
		• **phonenumber**—Associates a number or extension with this group. No spaces or dashes are allowed.
		• **phonenumberE164**—Associates a telephone number and area code with this group. No spaces or dashes are allowed.
		• **privilege**—Specifies the privilege level for the group. Members assigned to this group have the designated privilege rights.

Step 3	**`exit`**
	
	Example:
	`se-10-0-0-0(config)# exit`
		Exits configuration mode.

Step 4	**`show groups`** or **show group detail groupname** *groupid* **Example:** `se-10-0-0-0#` **`show group detail groupname sales`**	Displays a list of group IDs for all configured groups. This command does not display the details for the groups. Displays the detailed configuration information for the group *groupid* value.

Step 5	**`copy running-config startup-config`**
	
	Example:
	`se-10-0-0-0#` **`copy running-config startup-config`**
		Copies the configuration changes to the startup configuration.

Examples

The following example adds an owner and two members to the group sales and assigns sales a phone number:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# groupname sales member user1
se-10-0-0-0(config)# groupname sales member user2
se-10-0-0-0(config)# groupname sales owner user1
se-10-0-0-0(config)# groupname sales phonenumber 50163
se-10-0-0-0(config)# groupname sales phonenumberE164 12225550163
se-10-0-0-0(config)# groupname sales privilege ManagePrompts
sse-10-0-0-0(config)# exit

se-10-0-0-0(# show groups
Administrators
sales

se-10-0-0-0# show group detail groupname sales
Full Name:          Sales Department
Description:        CA office
Phone:              50163
Phone(E.164):       12225550163
Language:           en_ENU
Owners:             user1
Members:            user1 user2
se-10-0-0-0(#
```

Configuring Privileges

Cisco Unity Express software recognizes these privileges for subscribers:

- Superuser—The superuser privilege permits subscribers to log in to the Cisco Unity Express GUI as an administrator. Additionally, it permits subscribers to record spoken names for remote subscribers and locations through the Administration via Telephone (AvT).
- ManagePrompts—The prompt management subscriber has access to the AvT but not to any other administrative functions.
- broadcast—The broadcast privilege permits the subscriber to send broadcast messages across the network.
- local-broadcast—The local-broadcast privilege permits subscribers to send broadcast messages only to subscribers on the local network.
- ManagePublicList—The ManagePublicList privilege permits the subscriber to create and modify public distribution lists.
- ViewPrivateList—The ViewPrivateList privilege allows the subscriber to view another subscriber's private distribution lists. The subscriber cannot modify or delete the private lists.
- ViewRealTimeReports—The ViewRealTimeReports privilege permits the subscriber to view Real Time Reports.
- ViewHistorical Reports—The
- ViewHistoricalReports privilege permits the subscriber to view Historical Reports.
- vm-imap—The vm-imap privilege gives subscribers access to the IMAP feature.

These privilege levels are assigned to a group, and any member of the group is granted the privilege rights. The software initialization process created an Administrator group from the imported subscribers designated as administrators. Other groups can be created with these privileges. Assign subscribers to an existing group using the CLI commands or the GUI option **Configure> Users**.

To display a list of privileges, use the **show privileges** command in Cisco Unity Express EXEC mode.

To configure a group with a privilege level, see "Adding and Modifying a Group" on page 7.

CHAPTER 7

Configuring Voice Mail

This chapter contains the following procedures for configuring the Cisco Unity Express voice-mail application:

Using the New Method of Sending Voice Mail

Before release 3.0, there were two ways to leave a message in a mailbox on Cisco Unity Express:

- A caller reaches the VM of a subscriber because of CFNA/CFB and is prompted to leave a message.
- A subscriber logs into VM and composes and sends a message to another subscriber on the same Cisco Unity Express or another Cisco Unity Express node on a known remote location.

With Cisco Unity Express version 3.0 and later, a user can generate a message and insert it into a specific mailbox without having to log into this mailbox or for an external caller to call this extension to leave the message. To do this, subscribers use a new step in the Editor's voice mail palette called "Send Voice Message." This step requires two inputs:

- The extension of the mailbox to which to send the message
- The actual message that will be sent. (This can be any type of prompt supported by the editor.)

Configuring Triggers

After you configure the voice-mail application, you must configure the system to start the voice-mail application when a specific signal, or trigger, is invoked. The trigger is a telephone number and can be configured for either the SIP or JTAPI subsystems. When a caller dials a specified telephone number, the SIP or JTAPI subsystem starts the voice-mail application. To configure SIP and JTAPI triggers for the voice-mail application, see "Managing Triggers" on page 38.

For information on the number of triggers supported on Cisco Unity Express hardware, see *Release Notes for Cisco Unity Express*. See "Configuring Multiple Triggers for an Application" on page 46 for procedures to configure multiple triggers for an application.

This configuration is required for Cisco Unified CME and Cisco Unified Communications Manager (SRST mode).

Configuring the Voice-Mail Application

After the Cisco Unity Express software is installed on the system, the voice-mail application that ships with Cisco Unity Express must be configured using the procedures described in this section. The application is enabled by default.

To configure the voice-mail access and operator telephone numbers, see "Configuring SIP Triggers for the Applications" on page 39 or "Configuring JTAPI Triggers for the Applications (Cisco Unified Communications Manager Only)" on page 43.

The commands can be used in both EXEC and Cisco Unity Express configuration modes.

Sharing Ports Among Applications and Triggers

One of the parameters that you may configure for the voice-mail and auto-attendant applications is the maximum number of callers who can concurrently access the application at any specific time. This parameter, **maxsessions**, is limited by the number of ports on the Cisco Unity Express module. (See "Recording a Prompt File" on page 29 for the number of ports on your module.) For Cisco Unified Communications Manager, the ports are configured using the **ctiport** command (see "Configuring JTAPI Parameters (Cisco Unified Communications Manager Only)" on page 22).

Consider your expected call traffic when assigning the number of ports to an application. One application might need more available ports than another, but each application must have at least one port available for incoming calls.

Suppose, for example, that your module has four ports and you assign four to the voice-mail application maxsessions and four to the auto-attendant maxsessions. If four callers access voice-mail simultaneously, no ports will be available for auto-attendant callers. Only when zero, one, two, or three callers access voice-mail simultaneously will at least one port be available for auto-attendant.

Suppose, instead, that you assign three to the voice-mail maxsessions and three to the auto-attendant maxsessions. At no time will one application use up all the ports. If voice-mail has three active calls, one caller can access auto-attendant. A second call to auto-attendant will not go through at that moment.

Similarly, you must assign the maxsessions parameter to each application trigger, which is the telephone number that activates the application's script. The value of the trigger's maxsessions cannot exceed the application's maxsessions value.

Required Data for This Procedure

The following information is required to configure the default voice-mail application:

- Application name: voicemail
- Maximum number of subscribers who can access voice-mail simultaneously

SUMMARY STEPS

1. **config t**
2. **ccn application voicemai**l

3. **description "***text***"**
4. **maxsessions** *number*
5. **end**
6. **exit**
7. **show ccn application**
8. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`ccn application voicemail`**
	Example:
	`se-10-0-0-0(config)# ccn application voicemail`
		Enters application configuration mode for the voice-mail application.

Step 3	**`description "`***`text`***`"`**
	Example:
	`se-10-0-0-0(config-application)# description "Voice Mail"`
		(Optional) Enters a description of the application. Use double quotes around the text.

Step 4	**`maxsessions`** *`number`*
	Example:
	`se-10-0-0-0(config-application)# maxsessions 6`
		Specifies the *number* of subscribers who can access this application simultaneously. See "Sharing Ports Among Applications and Triggers" on page 2 for guidelines on assigning this value.

Step 5	**`end`**
	Example:
	`se-10-0-0-0(config-application)# end`
		Exits application configuration mode.

Step 6	**`exit`**
	Example:
	`se-10-0-0-0(config)# exit`
		Exits configuration mode.

Step 7	**`show ccn application`**
	Example:
	`se-10-0-0-0# show ccn application`
		Displays details about each configured application.

Step 8	**`copy running-config startup-config`**
	Example:
	`se-10-0-0-0# copy running-config startup-config`
		Copies the configuration changes to the startup configuration.

Example

The following example illustrates the **show ccn application** output:

```
se-10-0-0-0# show ccn application

Name:                           voicemail
Description:                    Voice Mail
Script:                         voicebrowser.aef
ID number:                      1
Enabled:                        yes
Maximum number of sessions:     6
logoutUri:                      http://localhost/voicemail/vxmlscripts/m bxLogout.jsp
uri:                            http://localhost/voicemail/vxmlscripts/login.vxml

se-10-0-0-0#
```

Planning Mailbox Configuration

Assign a voice mailbox to a subscriber configured in the Cisco Unity Express database. A mailbox subscriber is either an individual or the owner of a group.

Not all subscribers or extensions require a voice mailbox. To use mailboxes efficiently, consider the function or purpose of the subscriber or extension before assigning the mailbox.

The commands to create or modify a voice mailbox are the same.

This chapter contains the following sections:

- Types of Mailboxes, page 4
- Mailbox Properties, page 5
- Configuring Mailboxes, page 5
- Configuring PINless Mailbox Access, page 13
- Unlocking a Voice Mailbox, page 16
- Refreshing Message Waiting Indicators, page 16
- Configuring an Announcement-Only Mailbox, page 17
- Configuring Call Flow Customization, page 18

Types of Mailboxes

Cisco Unity Express supports two types of mailboxes:

- Personal mailbox—This mailbox is assigned to a specific subscriber and is accessible only by this subscriber. When a caller leaves a message in this mailbox, the message waiting indicator (MWI) light turns on.
- General delivery mailbox (GDM)—This mailbox is assigned to a group of subscribers. (See "Adding and Modifying a Group" on page 7 for the definition of group members.) All members in the group have access to the mailbox. When a caller leaves a message in this mailbox, no MWI is turned on. Instead, when a member logs in to the personal mailbox, the mailbox menu allows the member to access the messages in each GDM to which the member belongs. Only one person can access the GDM at a time. After the first person saves or deletes a message in the GDM, the message is no longer played as "new" for any subsequent members.

- Announcement-only mailbox—This mailbox can play the user greeting and disconnect the call only; it cannot take any messages from callers or send messages. For more information, see the "Configuring an Announcement-Only Mailbox" section on page 17.

Mailbox Properties

- Cisco Unity Express supports IP telephones using Skinny Client Control Protocol (SCCP) or analog telephones behind an SCCP gateway (such as the Cisco VG 248 or the Cisco ATA). Media Gateway Control Protocol (MGCP) IP telephones, analog FXS telephones on the Cisco Unified CME router, and soft telephones are not supported.
- Only the owner of a personal mailbox can delete messages in the mailbox. All members of a GDM can delete messages in the mailbox. The administrator cannot delete messages or display the length of time for which messages are stored in the system. When the mailbox owner logs in to the voice mailbox, the application notifies the owner of any expired messages.

  If the mandatory message expiry feature is enabled, the owner must delete the expired messages. If the mandatory message expiry feature is disabled, the owner can delete or save each message.

  If a message is saved from the expired messages menu, the expiry timer is restarted for that message.
- Mailboxes can have different storage sizes. Consider the purpose of the mailbox when assigning a smaller or larger size than the default. The aggregate of all mailboxes cannot exceed the maximum storage allowed on your system. See "Recording a Prompt File" on page 29 for the mailbox storage capacity for your system, and use the **show voicemail usage** command to display the amount of storage already configured.

Configuring Mailboxes

Follow this procedure to configure voice mailboxes.

Prerequisites

Verify that the users and groups that will have voice mailboxes are configured before using this procedure. If you have not created the users and groups, see "Adding and Modifying a User" on page 1 or "Adding and Modifying a Group" on page 7.

Required Data for This Procedure

System-wide mailbox default values were configured during the installation process. If necessary, modify any of the following values for a specific mailbox:

- Mailbox size
- Expiration time in days
- Message size

Use the **show voicemail limits** command to display the default values. See "Configuring System-Wide Voice-Mail Parameters" on page 20 for more information about system-wide mailbox default values.

SUMMARY STEPS

1. **config t**
2. **voice mailbox owner** *name* [**size** *seconds*]
3. **description "***text***"**
4. **enable**
5. **expiration time** *days*
6. **greeting** {**alternate** | **standard**}
7. **mailboxsize** *seconds*
8. **messagesize** *seconds*
9. **tutorial**
10. **zerooutnumber "***number***"**
11. **end**
12. **exit**
13. **show voicemail {detail** {**mailbox** | **user**} *name* | **limits** | **mailboxes** [**idle** *days*] | **usage** | **users**}
14. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`voice mailbox owner`** *`name`* [**`size`** *`seconds`*]
	Example:
	`se-10-0-0-0(config)# voice mailbox owner user3`
	`se-10-0-0-0(config)# voice mailbox owner sales`
		Creates a mailbox for the *name* value and with storage size *seconds* value, and enters mailbox configuration mode.
		This command maps the subscriber's name and extension (configured using the **username** command) to the voice mailbox.

Step 3	**`description "`***`text`***`"`**
	Example:
	`se-10-0-0-0(config-mailbox)# description "User 3 mailbox"`
		(Optional) Enters a description of the mailbox. Use double quotes around the text.

Step 4	**`enable`**
	Example:
	`se-10-0-0-0(config-mailbox)# enable`
		Activates the new mailbox or reactivates the disabled mailbox.

Step 5	**`expiration time`** *`days`*
	Example:
	`se-10-0-0-0(config-mailbox)# expiration time 10`
		Sets the number of days for which messages are stored in the mailbox. The default is 30 days.
		This value takes precedence over the system-wide expiration time.

	Command or Action	Purpose

Step 6	**greeting** {**alternate** | **standard**}
	Example:
	`se-10-0-0-0(config-mailbox)#` **`greeting standard`**
		Specifies which greeting to use when a caller reaches the mailbox. The mailbox owner can record standard and alternate greetings from the telephone user interface (TUI). If the subscriber has not recorded any messages, the default recording is used.
		Note Beginning in Cisco Unity Express 7.1, additional options for the **greeting** command are available. See Configuring Multiple Greetings, page 10.

Step 7	**mailboxsize** *seconds* **Example:** `se-10-0-0-0(config-mailbox)#` **`mailboxsize 300`**	Specifies the storage size of the mailbox, in seconds. This is the same as the **size** parameter mentioned in Step 2.
Step 8	**messagesize** *seconds* **Example:** `se-10-0-0-0(config-mailbox)#` **`messagesize 120`**	Specifies the maximum size of an incoming message, in seconds.
Step 9	**tutorial** **Example:** `se-10-0-0-0(config-mailbox)#` **`tutorial`**	Enables the mailbox tutorial program when the telephone subscriber logs in to the voice-mail system for the first time. The default is enabled. If the **tutorial** command is enabled after the mailbox is configured, the tutorial will start again but will confirm the subscriber's previous choices, rather than erasing them all. Use the **no tutorial** command to disable the tutorial.
Step 10	**zerooutnumber "***number***"** **Example:** `se-10-0-0-0(config-mailbox)#` **`zerooutnumber "2100"`**	Specifies the extension where a caller is routed when the caller presses "0' to reach an operator after being transferred to a subscriber's mailbox.

Step 11	**end**
	Example:
	`se-10-0-0-0(config-mailbox)#` **`end`**
		Exits mailbox configuration mode.

Step 12	**exit** **Example:** `se-10-0-0-0(config)#` **`exit`**	Exits configuration mode.

	Command or Action	Purpose

Step 13	**show voicemail** {**detail** {**mailbox** | **user**} *name* | **limits** | **mailboxes** [**idle** *days*] | **usage** | **users**}
	Example:
	`se-10-0-0-0#` **`show voicemail detail mailbox sales`**
	`se-10-0-0-0#` **`show voicemail detail mailbox user1`**
	`se-10-0-0-0#` **`show voicemail detail user user3`**
	`se-10-0-0-0#` **`show voicemail limits`**
	`se-10-0-0-0#` **`show voicemail mailboxes`**
	`se-10-0-0-0#` **`show voicemail mailboxes idle 5`**
	`se-10-0-0-0#` **`show voicemail usage`**
	`se-10-0-0-0#` **`show voicemail users`**
		Displays voice mailbox properties.
		• **detail**—Displays the details for a configured mailbox for the subscriber with the specified user ID. For a group mailbox, this is the name of the mailbox, not the owner of the mailbox. If a subscriber is an owner of a group mailbox, details for both the subscriber's personal and group mailboxes are displayed.
		• **limits**—Displays the default values for all mailboxes.
		• **mailboxes**—Displays all configured mailboxes and their current mailbox storage status. The **idle** parameter displays the mailboxes that have been inactive for at least the specified number of days.
		• **usage**—Displays how much of the system's voice-mail capacity has been used or configured.
		• **users**—Lists the local voice-mail subscribers.

Step 14	**copy running-config startup-config** **Example:** `se-10-0-0-0#` **`copy running-config startup-config`**	Copies the configuration changes to the startup configuration.

Examples

The following example configures a mailbox for a subscriber and displays the output of the **show** commands:

```
se-10-0-0-0# config t

se-10-0-0-0(config)# voice mailbox owner user3
se-10-0-0-0(config-mailbox)# description "User 3 mailbox"
se-10-0-0-0(config-mailbox)# expiration time 10
se-10-0-0-0(config-mailbox)# greeting alternate
se-10-0-0-0(config-mailbox)# mailboxsize 480
se-10-0-0-0(config-mailbox)# messagesize 120
se-10-0-0-0(config-mailbox)# no tutorial
se-10-0-0-0(config-mailbox)# zerooutnumber “2100”
se-10-0-0-0(config-mailbox)# enable
se-10-0-0-0(config-mailbox)# end
se-10-0-0-0(config)# exit

se-10-0-0-0# show voicemail detail mailbox user3

Owner:                                  /sw/local/users/user3
Type:                                   Personal
Description:                            User 3 mailbox
Busy state:                             idle
Enabled:                                true
Mailbox Size (seconds):                 480
Message Size (seconds):                 120
Play Tutorial:                          false
Space Used (seconds):                   0
Total Message Count:                    0
```

```
New Message Count:                      0
Saved Message Count:                    0
Future Message Count:                   0
Deleted Message Count:                  0
Expiration (days):                      10
Greeting:                               alternate
Zero Out Number:                        1234
Created/Last Accessed:                  Oct 15 2003 19:31:15 PST

se-10-0-0-0# show voicemail limits

Default Mailbox Size (seconds):         3000
Default Caller Message Size (seconds):  60
Maximum Recording Size (seconds):       900
Default Message Age (days):             30
System Capacity (minutes):              3600
Default Prompt Language:                en_ENU
Operator Telephone:                     1000
Maximum Broadcast Size (seconds):       300
Broadcast Message Age (days):           30
Broadcast Message MWI:                  disabled
Play Caller Id:                         disabled
Mandatory Message Expiry:               disabled
Mailbox Selection:                      last-redirect

se-10-0-0-0# show voicemail mailboxes

OWNER             MSGS NEW SAVE DEL BCST FUTR   MSGTIME MBXSIZE USED
user1             16   16   0    0   4    1       3000    3000    100%
user2             16   16   0    0   4    0       3000    3000    100%
user3             16   16   0    0   4    2       3000    3000    100%
user4             16   16   0    0   4    1       3000    3000    100%


se-10-0-0-0# show voicemail mailboxes idle 3

OWNER                              IDLE MSGS MSGTIME MBXSIZE
"user1"                            10   0    0       3000
“user2"                            10   0    0       3000
“user3"                            10   0    0       3000
“user4"                            10   0    0       3000
“user5"                            10   0    0       3000
“user6"                            10   0    0       3000

se-10-0-0-0# show voicemail mailboxes idle 20

OWNER                              IDLE MSGS MSGTIME MBXSIZE
"user1"                            18   0    0       3000

se-10-0-0-0# show voicemail detail user user3

-- Mailboxes owned --
"/sw/local/users/user3"       User 3 mailbox
-- Mailboxes accessible --

se-10-0-0-0# show voicemail usage

personal mailboxes:                     1
general delivery mailboxes:             0
orphaned mailboxes:                     0
capacity of voicemail (minutes):        6000
allocated capacity (minutes):           8.0
message time used (seconds):            0
message count:                          0
```

```
average message length (seconds):       0.0
greeting time used (seconds):           0
greeting count:                         0
average greeting length (seconds):      0.0
total time used (seconds):              0
total time used (minutes):              0.0
percentage used time (%):               0
se-10-0-0-0#
```

Configuring Multiple Greetings

Beginning in version 7.1, you can configure multiple greetings. These greetings fall into the following three categories:

- Standard greetings
- Alternate greetings

  This category includes the following types of greetings:
  - Alternate
  - Meeting
  - Vacation
  - Extended absence
- State-based greetings:

  This category includes the following types of greetings:
  - Busy
  - Closed
  - Internal

By default, the standard greeting is enabled and none of the alternate or state-based greetings are enabled. The standard greeting is always enabled but if one of the alternate greetings is enabled, it takes precedence over the standard and state-based greetings.

You can enable one or all of the state-based greetings. These greetings are played when no alternate greeting is enabled and the following conditions apply:

- When the system is busy, the busy greeting is played. When enabled, the busy greeting has precedence over the other state-based greetings.
- During nonbusiness hours, the closed greeting is played.
- When the call is from an internal number, the internal greeting is played.

Except for the standard greeting, when you enable a greeting, you can also specify an end date for the greeting.

You can also perform the following actions for all of the greetings:

- Set the source of the greeting.
- Upload a greeting.

Set the source of the greeting to one of the following:

- System greeting

  This greeting comes with the system and is made of system prompts.

- User recording

  This greeting is recorded/uploaded by the user. It can be recorded whether or not it is enabled.

- None

  This greeting is an empty greeting and can be selected if you want no greeting to be played.

By default, the source is the custom user recorded greeting. If the custom greeting is enabled and there is no user recording, the system greeting is played.

SUMMARY STEPS

1. **config t**
2. voice mailbox owner *name*
3. **greeting** {**alternate** | **meeting** | **vacation** | **extended-absence** | **busy** | **internal** | **closed**} {**enable** | **enable until month** *month* **day** *day* **time** *hh*:*mm*} **recording-type** {**user-recording** | **none** | **system-default**}
4. exit
5. voicemail default biz-schedule *name*
6. **end**
7. **voicemail mailbox copy owner** *owner* **greeting** {**alternate** | **meeting** | **vacation** | **extended-absence** | **busy** | **internal** | **closed**} **url** *url* **username** *username* **password** *password*
8. **voicemail mailbox delete owner** *owner* **greeting** {**alternate** | **meeting** | **vacation** | **extended-absence** | **busy** | **internal** | **closed**} **user-recording**
9. **show voicemail detail mailbox** *name*

DETAILED STEPS

<table>
<tr><th></th><th>Command or Action</th><th>Purpose</th></tr>
<tr><td><b>Step 1</b></td><td><b>config t</b>
<b>Example:</b>
se-10-0-0-0# configure terminal</td><td>Enters configuration mode.</td></tr>
<tr><td><b>Step 2</b></td><td><b>voice mailbox owner</b> <i>name</i>
<b>Example:</b>
se-10-0-0-0(config)# voicer mailbox owner user-8</td><td>Enters mailbox configuration mode.</td></tr>
<tr><td><b>Step 3</b></td><td><b>greeting</b> {<b>alternate</b> | <b>meeting</b> | <b>vacation</b> | <b>extended-absence</b> | <b>busy</b> | <b>internal</b> | <b>closed</b>} {<b>enable</b> | <b>enable until month</b> <i>month</i> <b>day</b> <i>day</i> <b>time</b> <i>hh</i>:<i>mm</i> | <b>recording-type {user-recording</b> | <b>none</b> | <b>system-default</b>}
<b>Example:</b>
se-10-0-0-0(config-mailbox)# greeting alternate enable until month 10 day 22 time 22:00</td><td>Enters mailbox configuration mode so that you can optionally perform the following actions:
• Enable a greeting.
• Enable a greeting with an end date.
• Set the source of the greeting.</td></tr>
</table>

	Command or Action	Purpose
Step 4	**exit** **Example:** se-10-0-0-0(config-mailbox)# exit	Exits to configuration mode.
Step 5	**voicemail default biz-schedule** *name* **Example:** se-10-0-0-0(config)# voicemail default biz-schedule standard-schedule	Specifies the default business schedule for the voicemail system.
Step 6	**end** **Example:** se-10-0-0-0(config)# end	Exits to privileged EXEC mode.
Step 7	**voicemail mailbox copy owner** *owner* **greeting** {**alternate** | **meeting** | **vacation** | **extended-absence** | **busy** | **internal** | **closed**} **url** *url* **username** *username* **password** *password* **Example:** se-10-0-0-0# voicemail mailbox copy owner user-8 greeting alternate url http:\\domain.com\folder\file.doc username admin-2 password my-pass	(Optional) Uploads a greeting.
Step 8	**voicemail mailbox delete owner** *owner* **greeting** {**alternate** | **meeting** | **vacation** | **extended-absence** | **busy** | **internal** | **closed**} **user-recording** **Example:** se-10-0-0-0# voicemail mailbox delete owner user-8 greeting vacation	(Optional) Deletes the user recording for a greeting
Step 9	**show voicemail detail mailbox** *name* **Example:** se-10-0-0-0# show voicemail detail mailbox user-8	(Optional) Displays information about a mailbox.

Examples

The following is sample output from the **show voicemail detail mailbox** command:

```
se-10-0-0-0# show voicemail detail mailbox user1

Owner:                                  /sw/local/users/user1
Type:                                   Personal
Description:                            user1
Busy state:                             idle
Enabled:                                enabled
Allow login without pin:                yes - from any phone number
Mailbox Size (seconds):                 3000
Message Size (seconds):                 60
Play Tutorial:                          true
Space Used (seconds):                   0
```

```
Fax Enabled:                        true
Total Message Count:                12
New Message Count:                  3
Saved Message Count:                3
Future Message Count:               2
Deleted Message Count:              4
Fax Message Count:                  1
Expiration (days):                  30
Greeting:                           standard, vacation, busy
Zero Out Number:                    1234
Created/Last Accessed:              Nov 05 2003 04:38:28 GMT+00:00
```

Configuring PINless Mailbox Access

Cisco Unity Express 3.2 offers the optional PINless voice mail feature, by which a subscriber can log in to their mailbox without a PIN. There are two modes of PINless voice mail access:

- To allow PINless access to voice mail only from the voice mailbox owner's configured extension or E.164 number. PINless login is not allowed from a subscriber's fax number.
- To allow PINless access to the mailbox from any phone.

Note In both of these scenarios, people other than the intended recipient can listen to the messages in the voice mailbox configured to offer PINless access.

Prerequisites

Cisco Unity Express 3.2 or a later version

The TUI and PINless Login

A mailbox configured to have PINless access only from its owner's primary extension can be accessed from that phone without its owner's user ID or PIN; however, if that mailbox is accessed from any other extension, its owner's user ID and PIN are both required. To get the menu for entering these, the subscriber must press '*-*' from the main mailbox menu.

A mailbox configured to have PINless access from any phone needs neither user ID nor PIN to be accessed from its owner's primary extension; however, when accessed from any other phone, that mailbox requires its owner's user ID. To get the menu for entering this, the subscriber must press '*-*' from the main mailbox menu.

Outcall Notification

On an outcall notification, the subscriber can enter their PIN to login to the mailbox. If PINless login from any phone is configured for that mailbox, then that subscriber can access the mailbox directly without challenge during outcall notification. If you configure PINless login to be from a subscriber extension only, that subscriber must enter the PIN to login to the mailbox during notification if notification is not to any of the subscriber's configured phones.

PIN Expiration

When PINless login is configured, the PIN expiration does not apply. If PINless login from subscriber's phones is enabled, PIN expiration applies only when logging into the mailbox from an extension other than the mailbox owner's own.However, this applies only to personal mailboxes. To configure the PIN expiration in conjunction with PINless configuration and AVT, see "Administration Via Telephone" on page 14.

Account Lockout, Mailbox In Use, and Mailbox Disabled

Account lockout, mailbox in use, and mailbox disabled apply regardless of PINless configuration.

Administration Via Telephone

PINless login applies only to the personal mailboxes; it does not apply to Administration Via Telephone (AvT). A subscriber must always enter both their extension and their PIN when logging into AvT.

If the subscriber's PIN has expired, the subscriber will be unable to log into AvT until they change their PIN. However, AvT will not prompt them to do so, and if their mailbox is configured to be PINless, the system does not prompt them to change their PIN when accessing their voice mailbox. Under these conditions, the subscriber must manually change their PIN by using one of the three following options:

- CLI, with the command username [name] pin [digits]
- GUI, on the User Profile page)
- TUI (under Setup Options > Personal Settings)

Tutorial

When a subscriber logs into their mailbox and the tutorial is run, the tutorial feature always requires them to set their PIN even if they have been configured to have PINless login.

VoiceViewExpress and PINless Login

When a PINless subscriber accesses VoiceViewExpress from their primary extension, they are taken directly to the home page. If that subscriber accesses VoiceView from some other phone, they must delete the autopopulated mailbox ID. They do this by going to the home page of the mailbox to which the phone is registered and pressing the "logout" softkey to get the login page. Here they must enter their own user ID, and also their PIN, unless they have been configured to have PINless voice mail from any phone.

Voice Message On Disabling Pinless Login

When you disable the PINless login for a mailbox, the system generates a new voice message and stores it in the mailbox: "Your mailbox was enabled to login without password and later it was disabled. If you have any questions contact the system administrator."

Voice Message on Changing from PINless Login from Any Phone to PINless Login from Subscriber's Phone

Whenever you change a voice mailbox configuration from PINless login from any phone to PINless login from subscriber's phone, the system generates a message: "Your mailbox was enabled to login without password from any phone and later it was disabled. If you have any questions contact the system administrator."

If you want to change PIN login behavior for a mailbox, use the login pinless command.

Starting in Cisco Unity Express config-mailbox mode, enter the following command:

[no|default] login pinless {subscriber-phones | anyphone}

The **no login pinless...** command forces a subscriber to enter a PIN in order to access the voice mailbox.

The **default login pinless...** command has the same effect as the **no login pinless...** command, because a PIN is required to access voice mailboxes by default.

The **login pinless subscriber-phones** command allows a caller to access the voice mailbox from the subscriber's configured extension, E.164, or fax numbers without requiring a PIN. Callers not originating from one of these sources will be required to enter a PIN.

The **login pinless any-phone** command allows any caller to access to the voice mailbox without entering a PIN.

Note Although this command appears under the GDM configuration, it is valid only for personal mailboxes. If you try to use the command in the GDM configuration, you get an error message.

Example:

```
se-10-0-0-0(config-mailbox)# no login pinless subscriber-phones
```

The following Cisco Unity Express EXEC mode command for displaying mailbox details also displays the PINless login configuration.

show voicemail detail mailbox [*owner*]

Example:

```
Owner: /sw/local/users/cjwhite
Type: Personal
Description:
Busy state: idle
Enabled: true
Allow login without pin: [no |
yes - from subscriber's phone numbers |
yes - from any phone number]
Mailbox Size (seconds): 3000
Message Size (seconds): 60
Play Tutorial: false
Fax Enabled: true
Space Used (seconds): 12
Total Message Count: 1
New Message Count: 1
Saved Message Count: 0
Future Message Count: 0
Deleted Message Count: 0
Fax Message Count: 0
Expiration (days): 30
Greeting: standard
Zero Out Number:
Created/Last Accessed: Jun 05 2007 17:06:07 PDTumber: 1
```

Unlocking a Voice Mailbox

If a mailbox becomes locked, the telephone subscriber will hear a message stating that the mailbox is unavailable. Use the **voice mailbox unlock** command to unlock the mailbox.

Starting in Cisco Unity Express EXEC mode, enter the following command:

voice mailbox unlock {**owner** *name* | **telephonenumber** *tel-number*}

name	Name of the mailbox owner.
tel-number	Extension or telephone number of the mailbox.

Example:

```
se-10-0-0-0# voice mailbox unlock owner user3
se-10-0-0-0# voice mailbox unlock telephonenumber 50174
```

This command is equivalent to the GUI operation of clicking the **Unlock** icon under **Voice Mail > Mailboxes**.

Refreshing Message Waiting Indicators

Occasionally the MWI lights on a subscriber's telephone get out of synchronization with the voice message status of the mailbox. When this condition happens, the MWI light is lit although the mailbox has no new messages or the MWI light is not lit although the mailbox has new messages.

Use the **mwi refresh all** or **mwi refresh telephonenumber** command to refresh the MWI lights and to synchronize the mailbox message status and MWI lights. If the subscriber has no messages, the MWI turns off. If the subscriber has voice messages, the MWI light turns on.

Starting in Cisco Unity Express EXEC mode, enter the following command:

mwi refresh all

or

mwi refresh telephonenumber *tel-number*

where *tel-number* is the telephone number of a specific extension.

Example:

```
se-10-0-0-0# mwi refresh all
se-10-0-0-0# mwi refresh telephonenumber 50174
```

This command is equivalent to the GUI operation of clicking the **Refresh All** or **Refresh Selected** icons under **Voice Mail > Message Waiting Indicators > Refresh**.

Configuring an Announcement-Only Mailbox

Beginning in version 7.1, you can configure announcement-only mailboxes. These mailboxes can play the user greeting and disconnect the call only; they cannot take any messages from callers or send messages.

Announcement-only mailboxes enable you to:

- Perform any operations that can be performed on a greeting in personal mailboxes, such as recording or deleting.
- Use all the new greeting types introduced by the multiple greeting feature. For more information, see the Configuring Multiple Greetings, page 10.
- Configure a General Delivery Mailbox as an announcement-only mailbox.

Also, announcement-only mailboxes:

- Cannot be part of everyone's list (9999)
- Are counted against the mailbox license
- Have a default size of 5 minutes when they are created, but the default size can be modified later

Because announcement-only mailboxes cannot send or receive messages, you cannot:

- Create distribution lists for them
- Configure notification devices for them

Therefore announcement-only mailboxes cannot:

- Have messages addressed to them
- Have notifications cascaded to them
- Receive broadcast messages

Subscribers can log in to announcement-only mailboxes using either the TUI, VVE, or IMAP. However, there is no reason to use IMAP to log into announcement-only mailboxes because they do not contain messages.

The following features are available only for personal mailboxes and cannot be used with announcement-only mailboxes:

- Message expiration time
- Message size
- Fax configuration

The following operations are available only for personal mailboxes in the TUI and VVE and cannot be used with announcement-only mailboxes:

- Playing new, saved, or deleted messages
- Sending messages
- Setting message parameters, such as configuration lists or notification devices

SUMMARY STEPS

1. **configure terminal**
2. **voice mailbox owner** *name* **type announcement-only** [**size** *seconds*]
3. **end**

4. **show voicemail detail mailbox** *name*

DETAILED STEPS

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** se-10-0-0-0# configure terminal	Enters configuration mode.
Step 2	**voice mailbox owner** *name* **type announcement-only [size** *seconds*] se-10-0-0-0(config)# voice mailbox owner user-8 type announcement-only size 60	Creates a mailbox that cannot be used to leave messages. It can only be used to make announcements.
Step 3	**end** **Example:** se-10-0-0-0(config)# end	Exits to privileged EXEC mode.
Step 4	**show voicemail detail mailbox** *name* **Example:** se-10-0-0-0# show voicemail detail mailbox user-8	(Optional) Displays information about a mailbox.

Examples

The following is sample output from the **show voicemail detail mailbox** command:

```
e-10-0-0-0# show voicemail detail mailbox User-8

Owner:                                  /sw/local/users/User-8
Type:                                   Announcement Only
Description:                            User1 mailbox
Busy state:                             idle
Enabled:                                true
Allow login without pin:no
Mailbox Size (seconds):300
Play Tutorial: false
Space Used (seconds):17
```

Configuring Call Flow Customization

Beginning in version 7.1, you can customize how the call flow proceeds in response to keys pressed by the caller during a call. For each mailbox, the mailbox owner or system administrator can assign one of the following actions to the keys input by the caller:

- Transfer the call to another number
- Connect to the operator
- Ignore the input
- Repeat the greeting
- Say good bye

- Skip the greeting
- Proceed with subscriber sign-in

These actions can be assigned only to single digit input by the user, such as the numbers zero through nine (0 - 9), the asterisk (*), or the pound sign (#).

You can also optionally restrict the use of the caller input feature by configuring a caller call-flow restriction table.

SUMMARY STEPS

1. **configure terminal**
2. **voice mailbox owner** *name*
3. **caller-flow caller-input** *input* {**ignore | repeat-greeting | say-goodbye | skip-greeting |subscriber-signin | transfer-to** *E164Phone* | **transfer-operator**}
4. **exit**
5. **voicemail conversation caller caller-flow restriction-table** *restriction-tablename*
6. **end**
7. **show voicemail detail mailbox** *name*
8. show voicemail conversation caller caller-flow restriction-table
9. show running-config

DETAILED STEPS

	Command or Action	Purpose

Step 1	`configure terminal`
	Example:
	`se-10-0-0-0# configure terminal`
		Enters configuration mode.

Step 2	`voice mailbox owner` *name* **Example:** `se-10-0-0-0(config)# voicer mailbox owner user-8`	Enters mailbox configuration mode.

Step 3	`caller-flow caller-input` *input* {`ignore` | `repeat-greeting` | `say-goodbye` | `skip-greeting` | `subscriber-signin` | `transfer-to` *E164Phone* | `transfer-operator`}
	Example:
	`se-10-0-0-0(config-mailbox)# caller-flow caller-input 6 subscriber-signin`
		Specifies the call flow for a specified caller input to use for this mailbox.

Step 4	`exit`
	Example:
	`se-10-0-0-0(config-mailbox)# exit`
		Exits to configuration mode.

	Command or Action	Purpose
Step 5	**voicemail conversation caller caller-flow restriction-table** *restriction-tablename* `se-10-0-0-0(config)# voicemail conversation caller caller-flow restriction-table call-flow restriction`	(Optional) Configures the restriction table that limits the scope of a call transfer through a call flow.

Step 6	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 7	**show voicemail detail mailbox** *name* **Example:** `se-10-0-0-0# show voicemail detail mailbox user-8`	(Optional) Displays information about a mailbox.
Step 8	**show** voicemail conversation caller caller-flow restriction-table **Example:** `se-10-0-0-0# show voicemail conversation caller caller-flow restriction-table`	(Optional) Displays information about the restriction table that limits the scope of a call transfer through a call flow.
Step 9	**show running-config** **Example:** `se-10-0-0-0# show running config`	(Optional) Displays the running configuration file.

Examples

For examples of the output from the following commands, see the "Examples" section on page 18.

- **show voicemail detail mailbox**
- **show voicemail conversation caller caller-flow restriction table**
- **show running-config**

Configuring System-Wide Voice-Mail Parameters

The following system-wide parameters are configurable for all voice mailboxes.

- Capacity—Total amount of storage time in hours allowed for all mailboxes in the system. The factory default is the maximum allowed storage for your system.
- Mandatory message expiry—Enabling this feature forces all subscribers to delete voice-mail messages when the messages expire. Subscribers will not have the option to keep the messages. Mandatory message expiry is disabled by default.

  After mandatory message expiry is enabled on the system, the TUI does not allow expired messages to be saved or resaved.

  The message expiration is calculated using the message delivery time, not the last time the message was saved.

  Forwarding messages to oneself is not allowed.

Use the **voicemail message mandatory-expiry** command or the **Defaults > Voice Mail** GUI option to enable mandatory message expiry.

- Expiration time—Number of days a message is kept in the mailbox. When the subscriber logs in to the voice mailbox, the subscriber hears a message listing all the expired messages. If the mandatory message expiry feature is disabled, the subscriber can save, skip, or delete each message. The factory default value is 30 days.
- Language—Language used for voice-mail prompts. See *Release Notes for Cisco Unity Express* for a list of the available languages. The default value is determined by the language package installed, and cannot be changed using the CLI commands.
- Mailbox size—Maximum number of seconds of storage for voice messages in a mailbox. The factory default value is determined by dividing the maximum storage capacity by the maximum number of mailboxes (personal plus general delivery).
- Message length—Maximum number of seconds for any one stored message in a mailbox. The factory default is 60 seconds.
- Recording time—Maximum amount of time for a subscriber's recorded mailbox greeting. Valid values are 10 to 3600 seconds. The default is 900 seconds.
- Operator extension—Extension of the voice-mail operator.

Caution The voice-mail telephone number and the voice-mail operator's telephone number cannot be the same. If they are, a subscriber who tries to call the operator while in the voice-mail system will be directed back to the voice-mail system. Also, an outside caller who presses the button for the operator will be connected to the voice-mail system.

- Caller ID information—Permits playing caller ID information for an incoming voice message. The default is not to play the information.
- Broadcast expiration time—Length of time in days that a broadcast message is stored on the system. See "Configuring Broadcast Messages" on page 26 for more information on configuring broadcast messages.
- Broadcast message recording time—Length in seconds of a broadcast message. Valid values are 10 to 3600 seconds. See "Displaying Broadcast Messages" on page 29 for more information on configuring broadcast messages.
- Broadcast message MWI status—Enables the MWI lights to turn on when an extension receives a broadcast message. The default is disabled. See "Enabling the MWI Lights for Broadcast Messages" on page 28 for more information on broadcast message MWI status.
- Voice mail caller recording prompt—Enables playing of a prompt to a caller to record a message after the receiver's greeting is played. The prompt message is "Record your message at the tone. When you are finished, hang up or press # for more options." The default is to play the prompt.
- Mailbox selection—Mailbox in which an incoming voice message is stored. The options are original called number (OCN) or the last redirected number (LRD). LRD is the default option.

  For example, suppose caller A calls subscriber B's extension, which forwards the call to subscriber C, who does not answer the phone. The call goes to voice mail. Subscriber B's extension is the OCN and subscriber C's extension is the LRD. If the system is configured with the OCN option, the system stores the message in subscriber B's mailbox. If the system is configured with the LRD option, the system stores the message in subscriber C's mailbox.

Note The mailbox selection option does not work if you select:
— The OCN option on a Cisco Unified CME system that networks two Cisco Unity Express modules.
— The OCN option on a Cisco Unified Communications Manager system that networks two Cisco Unity Express modules that do not have a configured voice-mail profile.
— The LRD option on a Cisco Unified Communications Manager system that networks two Cisco Unity Express modules.

The **Defaults > Voice Mail** GUI option also configures mailbox selection.

- Voice Mail Box Mask (Cisco Unified Communications Manager Only)

  Cisco Unity Express uses the voice mail box mask feature supported by Cisco Unified Communications Manager.

  No configuration is required on Cisco Unity Express to use this feature.

  If the voice mail box mask is configured on Cisco Unified Communications Manager, Cisco Unified Communications Manager applies the mask to the number before sending it to Cisco Unity Express. Cisco Unity Express uses this number to find the correct mailbox for the incoming redirected call.

  For example, suppose a call comes in for the directory number 7510 and is redirected to Cisco Unity Express voice mail.

  - If Cisco Unified Communications Manager does not have voice mail box mask configured, Cisco Unity Express tries to find a mailbox for 7510.
  - If Cisco Unified Communications Manager has voice mail box mask configured, such as 222555XXXX, Cisco Unified Communications Manager sends the number 2225557510 to Cisco Unity Express, which tries to find a mailbox for 2225557510.

To configure these parameters, see "Configuring System-Wide Voice-Mail Parameters for All Voice Mailboxes" on page 23. To configure different values for mailbox size, message length, and expiration date for a specific mailbox, see "Configuring Mailboxes" on page 5.

In addition to configuring the system-wide parameters for all voice mailboxes, you can also configure other system-wide general voice-mail parameters that control:

- Whether callers can leave multiple voice messages for the same or different subscriber without being first transferred to the operator
- Whether subscribers can play a summary of the new messages in General Delivery Mailboxes (GDMs) during login
- Which message properties subscribers hear when they retrieve a message using the TUI
- Whether voice messages were addressed by name or extension at the system level for all features

To configure these system-wide general voice-mail parameters, see the following sections:

- "Configuring System-Wide Voice-Mail Parameters for All Voice Mailboxes" on page 23
- "Configuring the Ability to Leave Multiple Voice Messages in the Same Session" on page 27
- "Configuring the Use of a Voice Mail Summary Prompt during Subscriber Login" on page 28
- "Configuring Message Properties (Envelope) Customization" on page 29
- "Configuring Default Addressing for Sending a Voice Message" on page 31
- "Configuring Caller ID for Incoming Messages" section on page 32

Configuring System-Wide Voice-Mail Parameters for All Voice Mailboxes

SUMMARY STEPS

1. **config t**
2. **voicemail capacity time** *minutes*
3. **voicemail message mandatory-expiry**
4. **system language preferred** *xx_YY*
5. **voicemail default** {**broadcast expiration time** *days* | **expiration time** *days* | **language** xx_YY | **mailboxsize** *mailboxsize-seconds* | **messagesize** *messagesize-seconds*}
6. **voicemail operator telephone** *tel-number*
7. **voicemail recording time** *seconds*
8. **voicemail callerid**
9. **voicemail conversation caller recording-prompt**
10. **voicemail mailbox-selection** {**last-redirect** | **original-called**}
11. **exit**
12. **copy running-config startup-config**
13. **show voicemail limits**
14. **show system language**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**voicemail capacity time** *minutes* **Example:** `se-10-0-0-0(config)# voicemail capacity time 3000`	Sets the *time* value as the system-wide maximum storage space in minutes allowed for all configured mailboxes.
Step 3	**voicemail message mandatory-expiry** **Example:** `se-10-0-0-0# voicemail message mandatory-expiry`	Enables mandatory message expiry.
Step 4	**system language preferred** xx_YY **Example:** `se-10-0-0-0(config)# system language preferred en_ENU`	Specifies the default language used for voice-mail prompts on the local Cisco Unity Express system. • *xx_YY*—Specifies the default language used for voice-mail prompts on the local Cisco Unity Express system. See the *Release Notes for Cisco Unity Express* for a list of available languages.

	Command or Action	Purpose

Step 5	**voicemail default** {**broadcast expiration time** *days* | **expiration time** *days* | **language** xx_YY | **mailboxsize** *mailboxsize-seconds* | **messagesize** *messagesize-seconds*}
	Example:
	`se-10-0-0-0(config)# voicemail default broadcast expiration time 15`
	`se-10-0-0-0(config)# voicemail default expiration time 30`
	`se-10-0-0-0(config)# voicemail default language en_ENU`
	`se-10-0-0-0(config)# voicemail default mailboxsize 300`
	`se-10-0-0-0(config)# voicemail default messagesize 120`
		Assigns default values for new individual or general delivery mailboxes. Later these values can be configured to other values for specific mailboxes.
		• **broadcast expiration time** *days*—Sets the number of days for which a broadcast message can be saved on the system.
		• **expiration** *days*—Sets the number of days for which a message can be stored in a mailbox before the voice-mail system deletes it.
		• **language**—Specifies the default language used for voice-mail prompts on the local Cisco Unity Express system. See the *Release Notes for Cisco Unity Express* for a list of available languages.
		• **mailboxsize** *mailboxsize-seconds*—Sets the maximum number of seconds for storing messages in a mailbox.
		• **messagesize** *messagesize-seconds*—Sets the maximum number of seconds for a caller's message stored in a mailbox.

Step 6	**voicemail operator telephone** *tel-number* **Example:** `se-10-0-0-0(config)# voicemail operator telephone 9000`	Assigns the *tel_number* value as the voice-mail operator's extension. A mailbox owner dials this extension while in the voice-mail system to reach the voice-mail operator. Do not assign this extension to a group. This extension need not be the same as the auto-attendant operator extension.
Step 7	**voicemail recording time** *seconds* **Example:** `se-10-0-0-0(config)# voicemail recording time 300`	Assigns the *time* value in seconds as the maximum recording time for any greeting or message in the voice-mail system. Valid values are 10 to 3600 seconds. The default value is 900 seconds.
Step 8	**voicemail callerid** **Example:** `se-10-0-0-0(config)#voicemail callerid`	Enables playing caller ID information for incoming voice messages.
Step 9	**voicemail conversation caller recording-prompt** **Example:** `se-10-0-0-0(config)#voicemail conversation caller recording-prompt`	Enables playing the prompt to a caller to record a message after the tone. Use the **no** form of this command to disable playing the prompt.

	Command or Action	Purpose

Step 10	**voicemail mailbox-selection** {**last-redirect** | **original-called**}
	Example:
	`se-10-0-0-0(config)# voicemail mailbox-selection last-redirect`
		Specifies the mailbox in which a forwarded call's message is stored.
		• **last-redirec**t—The system stores the message in the mailbox belonging to the extension that received the call from the original called party.
		• **original-called**—The system stores the message in the mailbox belonging to the extension that was originally called.
		Note The mailbox selection option does not work if you select:
		— The OCN option on a Cisco Unified CME system that networks two Cisco Unity Express modules.
		— The OCN option on a Cisco Unified Communications Manager system that networks two Cisco Unity Express modules that do not have a configured voice-mail profile.
		— The LRD option on a Cisco Unified Communications Manager system that networks two Cisco Unity Express modules.

Step 11	**exit** **Example:** `se-10-0-0-0(config)# exit`	Exits configuration mode.
Step 12	**copy running-config startup-config** **Example:** `se-10-0-0-0# copy running-config startup-config`	Copies the configuration changes to the startup configuration.
Step 13	**show voicemail limits** **Example:** `se-10-0-0-0# show voicemail limits`	Displays system-wide voice-mail parameter values.
Step 14	**show language preferred** **Example:** `se-10-0-0-0# show language preferred`	Displays which language the system is configured to use and/or a list of the languages available.

Example

The following example sets voicemail parameters.

```
se-10-0-0-0# config t
se-10-0-0-0(config)# voicemail capacity time 3000
se-10-0-0-0(config)# voicemail message mandatory-expiry
se-10-0-0-0(config)# voicemail default broadcast message expiration time 10
```

```
se-10-0-0-0(config)# voicemail default expiration time 15
se-10-0-0-0(config)# voicemail default language en_ENU
se-10-0-0-0(config)# voicemail mailboxsize 360
se-10-0-0-0(config)# voicemail messagesize 120
se-10-0-0-0(config)# voicemail operator telephone 8000
se-10-0-0-0(config)# voicemail recording time 180
se-10-0-0-0(config)# voicemail callerid
se-10-0-0-0(config)# voicemail mailbox-selection last-redirect
se-10-0-0-0(config)# end
se-10-0-0-0
```

The following example displays the output from the **show voicemail limits** command:

```
se-10-0-0-0# show voicemail limits
Default Mailbox Size (seconds):         360
Default Caller Message Size (seconds):  120
Maximum Recording Size (seconds):       180
Default Message Age (days):             15
System Capacity (minutes):              3000
Default Prompt Language:                en_ENU
Operator Telephone:                     8000
Maximum Broadcast Size (seconds):       300
Broadcast Message Age (days):           15
Broadcast Message MWI:                  disabled
Play Caller Id:                         enabled
Mandatory Message Expiry:               enabled
Mailbox Selection:                      last-redirect
```

To display the status of the caller recording-prompt, use the **show running-config** command. If the prompt has been disabled, the following line appears in the output:

```
no voicemail conversation caller recording-prompt
```

The **show running-config** output will not display any status of the prompt if the prompt is enabled.

The following example displays the output from the **show system language preferred** command:

```
se-10-0-0-0# show system language preferred
Preferred Language: en_US
```

The following example displays the output from the **show system language installed** command:

```
se-10-0-0-0# show system language installed
Installed Languages:
it_IT - Italian (Italian language pack) (2.3.0.0)
es_ES - European Spanish (Spanish language pack) (2.3.0.0)
en_US - US English (English language pack) (2.3.0.0)
fr_FR - European French (French language pack) (2.3.0.0)
ga_IE - Gaelic Irish English (Gaelic Irish language pack) (2.3.0.0)
es_CO - Latin American Spanish (Latin American Spanish language pack) (2.3.0.0)
es_MX - Mexican Spanish (Mexican Spanish language pack) (2.3.0.0)
fr_CA - Canadian French (Canadian French language pack) (2.3.0.0)
en_GB - British English (British English language pack) (2.3.0.0)
da_DK - Danish (Danish language pack) (2.3.0.0)
pt_BR - Brazilian Portuguese (Brazilian Portuguese language pack) (2.3.0.0)
de_DE - German (German language pack) (2.3.0.0)
ko_KR - Korean (Korean language pack) (2.3.0.0)
zh_CN - Mandarin Chinese (Mandarin Chinese language pack) (2.3.0.0)
ja_JP - Japanese (Japanese language pack) (2.3.0.0)
```

Configuring the Ability to Leave Multiple Voice Messages in the Same Session

Starting in release 3.0, callers can leave multiple voice message for the same or different subscriber without having to be first transferred to the operator.

You can configure these options by either:

- Using two commands available in 3.1 and later versions:
  - **voicemail conversation caller multi-msgs-same-mbx**
  - **voicemail conversation caller multi-msgs-any-mbx**
- Adding the options as parameters in the calling script.

  The voicebrowser.aef script is called when a call lands on voice mail pilot number. This script calls the login.vxml script internally. To pass the options to leave multiple messages as parameters of the calling script, customers can write a new .aef script to use instead of voicebrowser.aef. It is identical to the existing script, except that it will call login.jsp instead of login.vxml. It will pass the two parameters: multMsgsSameMbx and multMsgsDiffMbx. A value of 0 for these parameters means that the option is disabled, a value of 1 means that the option is enabled.

If both the above mentioned methods are used, the values passed in as the script parameters take precedence.

When callers are done leaving their message, they can use this feature by selecting from the following options:

- If the option to leave another message for the same mailbox is enabled, callers hear the prompt:

  "To leave another message for this mailbox, press 1"

  When callers press 1, they are prompted to record their message.
- If the option to leave a message for different mailbox is enabled, callers hear the prompt:

  "To leave a message for another mailbox on this system, press 2"

  "When callers press 2, they are prompted to:
  - Select a user or GDM on the system
  - Record the message
- If both options are enabled, callers hear both prompts described above and are then prompted with the corresponding options.

If both options are disabled or the timeout is exceeded, the call is not prompted for any input and is then either:

- Transferred to the operator, if the operator number is configured
- Disconnected

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **config t**
2. **voicemail conversation caller multi-msgs-same-mbx**
3. **voicemail conversation caller multi-msgs-any-mbx**

4. **end**
5. **show voicemail conversation {caller | subscriber}**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**voicemail conversation caller multi-msgs-same-mbx** **Example:** `se-10-0-0-0(config)# voicemail conversation caller multi-msgs-same-mbx`	Enables the caller to leave multiple messages for the same mailbox.
Step 3	**voicemail conversation caller multi-msgs-any-mbx** **Example:** `se-10-0-0-0(config)# voicemail conversation caller multi-msgs-any-mbx`	Enables the caller to leave multiple messages for the different mailboxes.

Step 4	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Step 5	**show voicemail conversation** {**caller** | **subscriber**}
	Example:
	`se-10-0-0-0# show voicemail conversation subscriber`
		(Optional) Displays the values configured for voice mail conversation.

Configuring the Use of a Voice Mail Summary Prompt during Subscriber Login

Starting in release 3.0, a system-wide configuration option enables subscribers to play a summary of the new messages in the corresponding General Delivery Mailboxes (GDMs) during login. This option is applicable only to users, not to GDMs. You can configure this option using either the CLI or the GUI.

This option is disabled by default. When the option is disabled, the behavior is the same as in previous versions. Before 3.0, for a subscriber to see if there were any new messages in their associated GDMs, they would have to access an individual GDM by pressing 9 when they logged into their mailbox.

When this option is enabled, users hear a prompt that explains how many messages they have and how many of those messages are urgent. If a GDM has a spoken name, it is included in the message. Otherwise, the mailbox extension is included in the message. After this point, the functionality is the same as in previous versions.

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **config t**
2. **voicemail conversation subscriber play-gdm-summary**
3. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`voicemail conversation subscriber play-gdm-summary`**
	Example:
	`se-10-0-0-0(config)# voicemail conversation subscriber play-gdm-summary`
		Enables the display of a summary of new messages in all the GDMs associated with a user.

Step 3	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Configuring Message Properties (Envelope) Customization

Starting in release 3.0, you can customize voice mail message playback preferences, such as which message properties subscribers hear when they retrieve a message using the TUI. These message properties are also commonly known as the message envelope.

By default, Cisco Unity Express plays all message properties. The message properties consist of the sender information, date and time of when the message was sent, reception date and time (if the message was received later than 30 minutes after it was sent), and other details such as the message number, type, priority. With this feature, you can customize the message playback to exclude information on the sender, date and time, and the day of week that the message was sent.

You can only customize the message properties of regular (new/saved/deleted) messages. You cannot customize Non-Delivery Receipts (NDR), Delayed Delivery Receipts (DDR), and broadcast messages because all available envelope information is essential in understanding those messages.

The following sections describe how to configure the following two options for configuring message properties:

- Specify that only some of the system-wide message properties (envelope) are played for regular voice mail messages.
- Include the playing of the day-of-week information in the message properties (envelope) of voice mail for regular messages.

Configuring Whether to Include Only Brief Message Properties

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **config t**
2. **voicemail conversation subscriber msg-properties brief**
3. **end**
4. **show voicemail conversation subscriber**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`voicemail conversation subscriber msg-properties brief`**
	Example:
	`se-10-0-0-0(config)# voicemail conversation subscriber msg-properties brief`
		The sender information, date, and time are stripped from the message properties playback, system wide.

Step 3	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Step 4	**`show voicemail conversation subscriber`**
	Example:
	`se-10-0-0-0# show voicemail conversation subscriber`
		(Optional) Displays the current message properties settings.

Configuring Whether to Include Day-of-Week Message Properties

SUMMARY STEPS

1. **config t**
2. **voicemail conversation subscriber msg-properties day-of-week**
3. **end**
4. **show voicemail conversation subscriber**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**voicemail conversation subscriber msg-properties** day-of-week **Example:** `se-10-0-0-0(config)# voicemail conversation subscriber msg-properties day-of-week`	Includes the day-of-week information in the message properties playback, system wide.

Step 3	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Step 4	**show voicemail conversation subscriber** **Example:** `se-10-0-0-0# show voicemail conversation subscriber`	(Optional) Displays the current message properties settings.

Configuring Default Addressing for Sending a Voice Message

Prior to release 3.0, you could not specify whether voice messages were addressed by name or extension at the system level for all the features. Starting with release 3.0, the default setting is the same as in previous versions, which is to address the message by name.

Prerequisites

Cisco Unity Express 3.0 or a later version

SUMMARY STEPS

1. **config t**
2. **voicemail conversation address-by** {**extension** | **name**}
3. **end**
4. **show voicemail conversation** {**caller** | **subscriber**}

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.

Step 2	**voicemail conversation address-by** {**extension** | **name**}
	Example:
	`se-10-0-0-0(config)# voicemail conversation address-by extension`
		Configures the voice mail addressing behavior. This command also changes the addressing behavior for the following features:
		• Individual subscriber message addressing
		• Distribution lists
		• Cascading
		• Multiple voice mail messages

Step 3	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Step 4	**show voicemail conversation** {**caller** | **subscriber**}
	Example:
	`se-10-0-0-0# show voicemail conversation subscriber`
		(Optional) Displays the values configured for voice mail conversation, including the addressing mode.

Configuring Caller ID for Incoming Messages

Cisco Unity Express supports caller ID information for incoming voice-mail messages.

When receiving an incoming voice-mail message from an external caller, the system attempts to match the associated caller ID information with an entry in the local directory. If a match is not found and the system is configured to play caller ID information, the system plays the sender’s telephone number in the message envelope when the recipient listens to that message. If the system is not configured to play caller ID information, the system plays “Unknown Caller” in the message envelope.

Cisco Unity Express does not verify that the caller ID information is valid. That function is dependent on the central office (CO) and the incoming trunk setup. Additionally, the local system plays caller ID information for Cisco Unified Communications Manager Express or Cisco Unified Communications Manager extensions that are not configured in the local Cisco Unity Express directory.

The default caller ID status is disabled. Use the GUI **Defaults > Voice Mail** option or the CLI command described below to enable or disable playing of caller ID information.

Note An external call is any telephone number that is not listed in the Cisco Unity Express subscriber directory. Possible sources of external calls are the local telephone company, an IP telephone, or an H.323 gateway. These sources must be configured to present caller ID information to the Cisco Unity Express system.

The following sections describe this feature:

- Enabling Caller ID on the Local System, page 33
- Disabling Caller ID on the Local System, page 33

Enabling Caller ID on the Local System

Use the following Cisco Unity Express configuration mode command to enable the playing of caller ID information in the message envelope of incoming external calls.

voicemail callerid

The following example illustrates enabling caller ID information on local system:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# voicemail callerid
se-10-0-0-0(config)# exit
```

Disabling Caller ID on the Local System

Use the following Cisco Unity Express configuration mode command to disable the playing of caller ID information in the message envelope of incoming external calls.

no voicemail callerid

The following example illustrates disabling caller ID information on local system:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# no voicemail callerid
se-10-0-0-0(config)# exit
```

Configuring Secure Messaging

Secure messaging allows individual mailbox subscribers to mark messages as secure. Messages marked secure have greater restrictions for sending, accessing and forwarding. See the following sections:

- Overview
- Configuring Global Secure Messaging Support
- Configuring Secure Messaging Support for Individual Mailboxes
- Enabling Secure Messaging Support for a Remote Network Location

Prerequisites

Cisco Unity Express 8.6 or a later version

Overview

Messages can be marked secure to restrict access in certain cases. Messages can be marked secure by individual subscribers, or you can configure Cisco Unity Express so that all outgoing messages are automatically marked secure.

You can configure the secure messaging to one of four settings:

- Ask—Subscribers have the option of marking any outgoing messages as secure.

- Always—All outgoing messages are automatically marked secure by the system.
- Never—No outgoing messages may be marked as secure. Subscribers do not have the option of marking messages secure.
- Private—All outgoing messages marked private are automatically marked secure by the system. Subscribers do not have the option of marking messages secure. This is the default setting.

These settings can be applied globally or to an individual mailbox.

Messages marked secure can be accessed using the Telephony User Interface and VoiceView Express without restrictions. Messages marked secure can only be accessed on the Web Voicemail interface if the subscriber accesses Cisco Unity Express using a secure HTTPS session.

Table 7-1 shows how subscribers can manage secure messages depending on how they access Cisco Unity Express.

Table 7-1 Secure Messaging Support for Cisco Unity Express Access Methods

Subscriber Action	Telephony User Interface (TUI)	VoiceView Express (VVE)	Web VoiceMail	IMAP Client	Cisco Unified Personal Communicator (CUPC)
Compose a new message, mark it secure and send it[1]	Supported	Supported	Supported on secure HTTPS session only.	Not supported	Supported only if logged in over a TLS connection.
Listen to an incoming message marked secure	Supported	Supported	Supported on secure HTTPS session only.	Not supported[2]	Supported only if logged in over a TLS connection.
Reply to or forward a message marked secure	Supported	Supported	Supported on secure HTTPS session only.	Not supported	Not supported.
Delete a message marked secure	Supported	Supported	Supported[3]	Supported[4]	Not supported.

[1] Requires secure messaging to be set to “ask”.

[2] Subscriber receives an instruction to listen to the message using the TUI, VVE or secure Web Voicemail.

[3] Subscribers on a non-secure session can delete a message marked secure without listening to it.

[4] Subscribers accessing Cisco Unity Express on an IMAP client can delete a message marked secure without listening to it. Deleting the secure message on the IMAP client deletes the actual message in Cisco Unity Express.

Note To receive secure messages from IMAP clients, the IMAP **session security** command must be set to “mixed” or “ssl”. For more information, see the “Configuring IMAP” section on page 1.

If a subscriber selects a secure message while accessing the Cisco Unity Express Web Voicemail interface through a non-secure HTTP session, the following message is displayed:

“This message is marked as secure and cannot be accessed in this session. Please re-login with https://<hostname>user.”

Messages marked secure cannot be saved past the expiration date as configured using the **voicemail default expiration time** command. Subscribers are prompted to delete any expired messages that are marked secure.

Configuring Global Secure Messaging Support

This procedure configures the global Cisco Unity Express secure messaging support for all outgoing messages.

SUMMARY STEPS

1. **config t**
2. **voicemail secure-messaging outgoing** {**always** | **ask** | **never** | **private**}

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	`voicemail secure-messaging outgoing {always | ask | never | private}`
	Example:
	`se-10-0-0-0(config)# voicemail secure-messaging outgoing ask`
		Configures the global security properties for all outgoing messages. The settings are:
		• **always**: All outgoing messages are always marked secure.
		• **ask**: Messages are marked secure only when users mark them secure.
		• **never**: Messages are never marked secure. This setting globally disables the secure messaging function.
		• **private**: Messages are marked secure only when users mark them private. This is the default setting.

Configuring Secure Messaging Support for Individual Mailboxes

This procedure configures secure messaging support for individual mailboxes. The settings for the individual mailbox override the global secure messaging setting.

SUMMARY STEPS

1. **config t**
2. **voice mailbox owner** *name* [**type announcement-only**] [**size** *seconds*]
3. **secure-messaging incoming**
4. **secure-message outgoing** {**always** | **ask** | **never** | **private**}

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.

Step 2	**voice mailbox owner** *name* [**type announcement-only**] [**size** *seconds*]
	Example:
	`se-10-0-0-0(config)# voice mailbox owner user8`
	`se-10-0-0-0(config-mailbox)#`
		Enters voice-mailbox configuration mode.

Step 3	**secure-messaging incoming** **Example:** `se-10-0-0-0(config-mailbox)# secure-messaging incoming`	Configures secure messaging for all incoming messages to the voice mailbox.

Step 4	**secure-message outgoing** {**always** | **ask** | **never** | **private**}
	Example:
	`se-10-0-0-0(config-mailbox)# secure-messaging outgoing always`
		Configures the secure messaging setting for all outgoing messages from the voice mailbox.

Enabling Secure Messaging Support for a Remote Network Location

This procedure enables secure messaging for all incoming messages to a remote network location. If this setting is not enabled, then an NDR message will be generated for any messages marked secure sent to the remote location.

Prerequisite

The remote network location must be configured. See the "Configuring Network Locations" section on page 3.

SUMMARY STEPS

1. **config t**
2. **network location id** *number*
3. **voicemail secure-messaging**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.

Step 2	**network location id** *number*
	Example:
	`se-10-0-0-0(config)# network location id 9`
	`se-10-0-0-0(config-location)#`
		Enters network location configuration mode.

Step 3	**voicemail secure-messaging** **Example:** `se-10-0-0-0(config-location)# voicemail secure-messaging`	Enables secure messaging for all incoming messages to the network location.

CHAPTER 8

Configuring Authentication, Authorization, and Accounting

This chapter contains procedures for:

- Configuring the Accounting Server, page 2
- Configuring the Authentication Server, page 4
- Configuring the AAA Policy, page 5
- Configuring Privileges, page 8
- Configuring Accounting Event Logging, page 18
- Configuring Console Authentication, page 21

Overview

Release 7.0 provides a set of new features for Authentication, Authorization, and Accounting (AAA). These features expand on the authentication and authorization functionality available in previous releases, such as determining which user could access restricted services by assigning predefined privileges to groups.

In release 7.0, you can create new privileges and customize existing privileges and then assign these privileges to groups as you did in previous releases.

In addition, release 7.0 also includes these new AAA features:

- The ability to log AAA accounting information that enables you to easily audit configuration changes, maintain security, accurately allocate resources, and determine who should be billed for the use of resources.
- The ability to use a remote RADIUS server for authentication.
- The ability to configure failover capabilities to for the accounting and authentication servers.

To configure the AAA features, use the following procedures:

- Configuring the Accounting Server, page 2
- Configuring the Authentication Server, page 4
- Configuring the AAA Policy, page 5
- Configuring Privileges, page 8
- Configuring Accounting Event Logging, page 18

- Configuring Console Authentication, page 21

Configuring the Accounting Server

You can configure up to two AAA accounting servers. Automatic failover functionality is provided if you have two accounting servers configured. In this case, if the first server is unreachable, the accounting information is sent the second server. If both accounting servers are unreachable, accounting records are cached until a server becomes available. If a server cannot be reached before the cache is full, the oldest accounting packets are dropped to make room for the new packets.

Because the configuration of the AAA accounting server is completely independent of the AAA authentication server, you can configure the AAA accounting server to be on the same or different machine from the AAA authentication server.

If you use a syslog server, it is not affected by the AAA configuration and continues to use the existing user interfaces. When the RADIUS server sends AAA accounting information to a syslog server, it is normalized into a single string before being recorded. If no syslog server is defined, the AAA accounting logs are recorded by the syslog server running locally on Cisco Unity Express.

For an accounting server, you can configure the following information used to log into the server:

- Server IP address or DNS name
- Port number used
- Cryptographic shared secret and security credentials
- Number of login retries
- Length of login timeout

Note Only RADIUS servers are supported.

Specifying AAA Accounting Settings

SUMMARY STEPS

1. **config t**
2. **aaa accounting server remote**
3. **address** *address* [**port** *port*] **secret** *secret*
4. **address** *address* [**port** *port*] **credentials hidden** *cred*
5. **retries** *number*
6. **timeout** *seconds*
7. **end**
8. **show aaa accounting service**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**aaa accounting server remote** **Example:** `se-10-0-0-0(config)# aaa accounting server remote`	Enters aaa-authentication submode to enable you to configure the AAA authentication server.
Step 3	**address** *address* [**port** *port*] **secret** *secret* **Example:** `se-10-0-0-0(config)# address 10.2.2.10 prt 1808 secret ezsecret`	Defines the access parameters for the AAA accounting server.
Step 4	**address** *address* [**port** *port*] **credentials hidden** *cred* **Example:** `se-10-0-0-0(config)# address 10.2.2.10 port 1808 credentials hidden "EugxIjn3MbL3WgUZUdUb90nfGW TYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmP"`	Defines the access parameters for the AAA accounting server.
Step 5	**retries** *number* **Example:** `se-10-0-0-0(config)# retries 6`	Specifies the maximum number of times an AAA accounting request is retried before the accounting request fails.
Step 6	**timeout** *seconds* **Example:** `se-10-0-0-0(config)# timeout 24`	Specifies the amount of time to wait before an AAA accounting request is considered to be unanswered.

Step 7	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 8	**show aaa accounting service** **Example:** `se-10-0-0-0# show aaa accounting service`	(Optional) Displays the settings for the AAA accounting server.

Examples

The following is sample output from the **show aaa accounting service** command:

```
se-10-0-0-0# show aaa accounting service
AAA Accounting Service Configuration
Accounting: Enabled
```

```
Address: 192.168.1.101 Port: 1813 Credentials:
EugxIjn3MbL3WgUZUdUb90nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGW
TYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmP
Address: 192.168.1.100 Port: 1813 Credentials:
EugxIjn3MbL3WgUZUdUb90nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGW
TYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmP
Timeout: 5 (sec)
Retries: 3
```

Configuring the Authentication Server

The two procedures for configuring AAA authentication consist of:

- Configuring connection parameters for the AAA authentication server
- Configuring whether the authentication servers or local authentication database will be queried first

This section covers only the first procedure. The second procedure is covered in the "Configuring the AAA Policy" section on page 5.

For an AAA authentication server, you can configure the following information used to log into the server:

- Server IP address or DNS name
- Port number used
- Cryptographic shared secret and security credentials
- Number of login retries
- Length of login timeout

Note To help protect the cryptographic information of the RADIUS server, you must view the running configuration to see this information.

Specifying AAA Authentication Settings

SUMMARY STEPS

1. **config t**
2. **aaa authentication server remote**
3. **address** *address* [**port** *port*] **secret** *secret*
4. **address** *address* [**port** *port*] **credentials hidden** *cred*
5. **retries** *number*
6. **timeout** *seconds*
7. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**aaa authentication server remote** **Example:** `se-10-0-0-0(config)# aaa authentication server remote`	Enters aaa-authentication submode to enable you to configure the AAA authentication server.
Step 3	**address** *address* [**port** *port*] **secret** *secret* **Example:** `se-10-0-0-0(config)# address 10.2.2.10 port 1808 secret ezsecret`	Defines the access parameters for the AAA authentication server.
Step 4	**address** *address* [**port** *port*] **credentials hidden** *cred* **Example:** `se-10-0-0-0(config)# address 10.2.2.10 port 1808 credentials hidden "EugxIjn3MbL3WgUZUdUb90nfGW TYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmPSd8ZZNgd+Y9J3xlk2B35j0nfGWTYHfmP"`	Defines the access parameters for the AAA authentication server.
Step 5	**retries** *number* **Example:** `se-10-0-0-0(config)# retries 6`	Specifies maximum number of times an AAA authentication request is retried before the authentication request fails.
Step 6	**timeout** *seconds* **Example:** `se-10-0-0-0(config)# timeout 24`	Specifies the amount of time to wait before an AAA authentication request is considered unanswered.

Step 7	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Configuring the AAA Policy

The AAA policy specifies the failover functionality that you can optionally configure for the authentication server. You can choose from two types of failover functionality:

- Authentication failover
- Unreachable failover

You can also use a combination of both failover methods.

Authentication Failover

The authentication failover feature enables you to optionally use a remote RADIUS server for user login authentication in addition to the local database. The procedure in this section configures the order in which authentication is resolved. You can configure authentication to use:

- Only the local database
- Only the remote server
- The local database first, then the remote server
- The remote server first, then the local database

When using both local and remote authentication, you can also configure whether you want the user attributes that are retrieved from a remote RADIUS AAA server to be merged with the attributes found in the local user database for the same username.

Note The authentication failover feature has the following limitations:

- Authentication with a RADIUS server is available only when accessing the GUI or CLI interface and requires only a user ID and password. Authentication for the TUI, VVE, AvT, and IMAP interfaces can use only the local database. Therefore, users of the TUI, VVE, AvT, and IMAP interfaces must be configured locally in order to gain access. The auto-attendant interface does not require authentication because it is user independent.
- Login information is not synchronized between the local system and the remote server. Any security features such, as password expiration, must be configured separately for Cisco Unity Express and the RADIUS server. Also, Cisco Unity Express users are not prompted when security events, such as password expiration or account lockout, occur on the RADIUS server, and vis versa.

Unreachable Failover

The unreachable failover is used only with RADIUS servers. This feature enables you to configure up to two addresses that can be used to access RADIUS servers.

As Cisco Unity Express attempts to authenticate a user with the RADIUS servers, messages are sent to users to notify them when a RADIUS server:

- Cannot be reached
- Fails to authenticate the user

Example

In this example, authentication is performed by the remote server first, then by the local database. Also, two addresses are configured for the remote RADIUS server.

This is a sequence of events that could occur during authentication for this example:

1. Cisco Unity Express tries to contact the first remote RADIUS server.
2. If the first RADIUS server does not respond or does not accept the authentication credentials of the user, Cisco Unity Express tries to contact the second remote RADIUS server.

3. If the second RADIUS server does not respond or does not accept the authentication credentials of the user, the user receives the appropriate error message and Cisco Unity Express tries to contact the local database.
4. If the local database does not accept the authentication credentials of the user, the user receives an error message.

Specifying the Policy that Controls the Behavior of Authentication and Authorization

SUMMARY STEPS

1. **config t**
2. **aaa policy system**
3. **authentication-order** {**remote** [**local**] | **local** [**remote**]}
4. **authorization merge-attributes**
5. **end**
6. **show aaa policy**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`aaa policy system`**
	Example:
	`se-10-0-0-0(config)# aaa policy system`
		Enters aaa-authentication submode to enable you to specify the policy that controls the behavior of authentication and authorization.

Step 3	**`authentication-order`** {**`remote`** [**`local`**]|**`local`** [**`remote`**]}
	Example:
	`se-10-0-0-0(config)# authentication-order remote local`
		Specifies the order in which to query the authentication servers and local authentication database.

Step 4	**`authorization merge-attributes`**
	Example:
	`se-10-0-0-0(config)# authorization merge-attributes`
		Specifies whether the user attributes that are retrieved from a remote RADIUS AAA server are merged with attributes for the same username found in the local user database.

	Command or Action	Purpose

Step 5	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 6	**show aaa accounting policy** **Example:** `se-10-0-0-0# show aaa policy`	(Optional) Displays the AAA policy settings.

Examples

The following is sample output from the **show aaa policy** command:

```
se-10-0-0-0# show aaa policy
authentication-order local
merge-attributes enable
preferred-server remote
```

Configuring Privileges

Cisco Unity Express software provides several predefined privileges that you can assign to groups. Starting with 7.0, you can also create your own privileges and modify the predefined privileges.

When you assign a privilege to a group, any member of the group is granted the privilege rights. An administrator group is created automatically by the software initialization process from the imported subscribers designated as administrators.

When you create or modify privileges, you add or delete the operations allowed by that privilege. Operations define the CLI commands and GUI functions that are allowed. In addition to adding operations to a privilege, you can also configure a privilege to have another privilege nested inside of it. A privilege configured with a nested privilege includes all operations configured for the nested privilege.

As part of the planning process, you should decide:

- How many categories of user privileges you want to create for your company.
- Which functions each privilege will allow your users to perform.

After you decide which privileges you want your users to have:

1. Review the predefined privileges to determine whether any of them are similar to the permissions that you want to give to each of your categories of users.
2. Configure a separate privilege for each category by specifying which operations each category of users will be allowed to preform, optionally including predefined privileges (see "Creating and Customizing Privileges" on page 15).
3. Create a group for each category of user privilege and assign the appropriate privilege to each group of users (see "Adding and Modifying a Group" on page 7).
4. Add your users to the appropriate group.

Tip For an example of the commands used for these steps, see the "Configuration Example" section on page 13.

Note You cannot modify the superuser privilege.

Table 8-1 describes the predefined privileges provided with the Cisco Unity Express software and the operations associated with them. Table 8-2 describes all available operations that you can add to privileges.

Note Two new permissions were added in 7.0: manage-users and manage-passwords.

To display a list of privileges, use the **show privileges** command in Cisco Unity Express EXEC mode. To display detailed information about a specific privilege, use the **show privilege detail** command.

Note Users do not need privileges to access their own data. The user's data is primarily associated with the voice mail application and includes the user's:

- Language (configured for the user's voice mailbox)
- Password
- PIN
- Membership to groups owned by the user
- Ownership of groups owned by the user
- Notification profile
- Cascade settings
- Personal voice mail zero out number
- Voice mail greeting type
- Voice mail play tutorial flag
- Public distribution lists owned by the user
- Private distribution lists

Table 8-1 Privileges

Privilege	Description	Operations
Superuser	Grants unrestricted system access.	all
Manageprompts	Allows subscriber access to the AvT prompt management but not to any other administrative functions.	prompt.modify, system.debug
Broadcast	Allows subscribers to send broadcast messages across the network.	broadcast.local, broadcast.remote, system.debug
Local-broadcast	Allows subscribers to send broadcast messages only to subscribers on the local network.	broadcast.local, system.debug
ManagePublicList	Allows subscribers to create and modify public distribution lists.	voicemail.lists. public, system.debug

Table 8-1 Privileges (continued)

Privilege	Description	Operations
ViewPrivateList	Allows subscribers to view another subscriber's private distribution lists. The subscriber cannot modify or delete the private lists.	voicemail.lists.private.view
vm-imap	Allows subscribers to access the IMAP feature.	voicemail.imap.user
ViewHistorical Reports	Allows subscribers to view historical reports.	report.historical
ViewRealTime Reports	Allows subscribers to view real-time reports	report.realtime
manage-users	Allows subscribers to create, modify, and delete users	user.configuration, user.pin, user.password, user.mailbox, user.notification, user.remote, group.configuration, system.debug
manage-passwords	Allows subscribes to create, modify, and delete user passwords and PINs	user.pin, user.password, system. debug

Table 8-2 Operations

Operation	Description
broadcast.local	Create and send broadcast messages to local locations. Delete or reschedule broadcast messages.
broadcast.remote	Create and send broadcast messages to remote and local locations.
call.control	Configure settings for Cisco Unified CME (SIP) and Cisco Unified Communications Manager (JTAPI).
group.configuration	Create, modify, and delete groups.
network.location	Create, modify, and delete network locations, network location caching, and NDR/DDR configuration.
prompt.modify	Create, modify, and delete system prompts for AA scripts. Also includes upload/download of prompts on the CLI.
report.historical.manage	Configure and generate historical reports. Collect data from Cisco Unity Express using the **copy** command.
report.historical.view	View historical reports
report.realtime	Run and view real-time reports.
report.voicemail	Run and view voice mail reports.
restriction.tables	Create, modify, and delete restriction tables.

Table 8-2 Operations (continued)

Operation	Description
script.modify	Create, modify, and delete system AA scripts. Also include upload and download of scripts on the CLI and Editor Express.
security.aaa	Configure and view AAA service settings.
security.access	Configure system level security regarding encryption of data, including defining crypto keys. **Note** Also includes permission to reload the system.
security.configuration	Configure settings for the system password/PIN and policy, such as: • Expiry • Lockout (temporary and permanent) • History • Length
services.configuration	Configure system services: DNS, NTP/clock, SMTP, SNMP, Fax Gateway, Cisco UMG, hostname, domain, interfaces (counters) and system default language. **Note** Also includes permission to reload the system.
services.manage	System level services commands not related to configuration like clearing DNS cache and ping
site.configuration	Create, modify, or delete sites for use with Cisco UMG.
software.install	Install, upgrade, or inspect system software or addons such as languages and licenses. **Note** Also includes permission to reload the system.
spokenname.modify	Create, modify, and delete spoken names for remote locations, remote users, and public distribution lists. Copy spoken names.
system.application	Configure system applications, such as voice mail, auto-attendent, PromptManagement, and so on.
system.backup	Configure backup.
system.calendar	Create, modify, and delete system schedules and holidays.
system.debug	Collect and configure trace and debug data. Includes copying data like core and log files.
system.documents	Manage tiff, general, and template documents.

Table 8-2 Operations (continued)

Operation	Description
system.numbers	Create, modify, and delete call-in numbers for voice mail, AA, AvT, and IVR. This includes SIP, JTAPI, and HTTP triggers.
system.sessions	Terminate others voice mail sessions (VVE, SIP, or JTAPI). Unlock locked mailboxes.
system.view	View system settings and configuration.
user.configuration	Create, modify, and delete users and groups, including the configuration of: • First and Last Name • Nickname • Display Name • Language
user.mailbox	Create, modify, and delete a user or group voice mailbox.
user.notification	Set or change others notification/cascade profiles.
user.password	Create, set, or remove others passwords.
user.pin	Create, set, or remove others pins.
user.remote	Create, modify, and delete remote users.
voicemail.configuration	Configure system-level voice-mail features: • Mailboxes • Fax • Notification/cascade • Non-subscriber options • Broadcast • TUI config • Live-record • Live-reply • IMAP • VVE
voicemail.imap.user	Manage personal voice mail via IMAP client.
voicemail.mwi	Reset/Refresh phone message waiting indicators. Configure SIP MWI delivery.
voicemail.lists.private	Create, modify, and delete others private voice mail lists.
voicemail.lists.public	Create, modify, and delete public voice mail distribution lists.
voicemail.lists.private.view	(GUI Only) View others private voice mail lists.

Table 8-2 Operations (continued)

Operation	Description
webapp.modify	Deploy web applications on Cisco Unity Express.
webapp.control	Start, stop, or restart web applications.

Configuration Example

In this example, a company wants a security structure with two levels of security administration. The two levels allow the following actions to be taken by the administrator:

- The first level enables the security administrator to reset the passwords and PINs for users that have locked themselves out of the system, whether they forgot their password or their account is locked because of too many failed login attempts. This level will be called PASSWORD RESET.
- The second level enables the security administrator to act as a system guardian by:
  - Ensuring that the proper security policies are implemented for issues such as password aging, account lockout, encryption, authentication, authorization, and accounting
  - Ensuring that voicemail messages and other data remain safe from attackers without over burdening end users with security related details and tasks
  - Monitoring the system to ensure that only legitimate users have access
  - Troubleshooting any problems that legitimate users have with accessing the system
  - Resetting passwords and PINs for users that have locked themselves out of the system, whether they forgot their password or their account is locked because of too many failed login attempts

  This level will be called SYSTEM GUARDIAN

When you use the general planning and configuration steps as described in the "Configuring Privileges" section on page 8, to set up the security administration levels for this example, these are the results:

- You have already decided:
  - How many levels or categories of user privileges you want to create for your company
  - Which functions each privilege will allow your users to perform

  There will be two levels, called PASSWORD RESET and SYSTEM GUARDIAN, as described above.
- After reviewing the predefined privileges to determine whether any of them are similar to the permissions that you want to give each of your security levels, you find that:
  - The predefined privilege called *manage-passwords* can be used for the security level named PASSWORD RESET because it has all of the permissions needed to help users that have locked themselves out of the system.
  - The *manage-passwords* privilege also has a subset of the permissions needed the security level named SYSTEM GUARDIAN and is the predefined privilege closest to your requirements. However, to act as system guardian, the following additional operations will have to included: *security.access*, *security.aaa*, *security.password*, *security.pin*, *system.debu*g, and *system.view*. See Table 8-2 on page 10 for more information.
- Use the following commands to configure a privilege for the SYSTEM GUARDIAN security level by including the predefined privilege *manage-password* and adding the operations listed in the previous bullet:

```
se-10-0-0-0(config)# privilege guardian-privilege create
```

```
se-10-0-0-0(config)# privilege guardian-privilege member manage-passwords
se-10-0-0-0(config)# privilege guardian-privilege operation security.access
se-10-0-0-0(config)# privilege guardian-privilege operation security.aaa
se-10-0-0-0(config)# privilege guardian-privilege operation security.password
se-10-0-0-0(config)# privilege guardian-privilege operation security.pin
se-10-0-0-0(config)# privilege guardian-privilege operation system.debug
se-10-0-0-0(config)# privilege guardian-privilege operation system.view
```

Note You do not have to configure a privilege for the PASSWORD RESET security level because you can use the predefined privilege *manage-passwords*.

- Use the following commands to create a new group called *password-reset* and assign the privilege called *manage-password*s to it:

```
se-10-0-0-0(config)# groupname password-reset create
se-10-0-0-0(config)# groupname password-reset privilege manage-passwords
```

- Use the following commands to create a new group called *system-guardian* and assign the privilege called *guardian-privilege*:

```
se-10-0-0-0(config)# groupname system-guardian create
se-10-0-0-0(config)# groupname system-guardian privilege guardian-privilege
```

- Assign the appropriate users to the new groups, associating them with their roles. For example, if you want Bob and Ned to have the privileges of the PASSWORD RESET security administration level and Ann to have the privileges of the SYSTEM GUARDIAN security administration level, use the following commands:

```
se-10-0-0-0(config)# groupname password-reset member bob
se-10-0-0-0(config)# groupname password-reset member ned
se-10-0-0-0(config)# groupname system-guardian member ann
```

- The configuration of this example is now complete. You can verify your configuration using the following commands.

  The following is sample output from the **show group detail groupname password-reset expanded** command:

```
se-10-0-0-0# show group detail groupname password-reset expanded
Groupname:          password-reset
Full Name:          password-reset
Description:
Email:
Epage:

Group Members:      <none>
User Members:       bob ned
Group Owners:       <none>
User Owners:        <none>
Privileges:         manage-passwords
```

  The following is sample output from the **show group detail groupname system-guardian expanded** command:

```
se-10-0-0-0# show group detail groupname system-guardian expanded
Groupname:          system-guardian
Full Name:          system-guardian
Description:
Email:
Epage:

Group Members:      <none>
```

```
User Members:       ann
Group Owners:       <none>
User Owners:        <none>
Privileges:         guardian-privilege
```

The following is sample output from the **show privilege detail manage-passwords expanded** command:

```
se-10-0-0-0# show privilege detail manage-passwords expanded
Privilege:          manage-passwords
Description:        Privilege to reset user passwords

Privilege Members:  <none>
Operations:         system.debug user.password user.pin
```

The following is sample output from the **show privilege detail guardian-privilege expanded** command:

```
se-10-0-0-0# show privilege detail guardian-privilege expanded
Privilege:          guardian-privilege
Description:

Privilege Members:  manage-passwords
Operations:         security.aaa security.access security.password security.pin
                    system.debug system.view
   manage-passwords:system.debug user.password user.pin
```

Creating and Customizing Privileges

SUMMARY STEP

1. **config t**
2. **privilege** *privilege-name* **create**
3. **privilege** *privilege-name* **description** *string*
4. **privilege** *privilege-name* **operation** *operation-name*
5. **privilege** *privilege-name* **member** *privilege-name2*
6. **end**
7. **show operations**
8. **show operation detail** *operation-name*
9. **show privileges**
10. **show privilege detail** *privilege-name*

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`privilege`** *`privilege-name`* **`create`**
	Example:
	`se-10-0-0-0(config)# privilege security-privilege create`
		Creates a new privilege.
		• *privilege-name*—Label used to identify and configure a new or existing privilege.

Step 3	**`privilege`** *`privilege-name`* `[`**`description`** *`string`*`]`
	Example:
	`se-10-0-0-0(config)# privilege security-privilege description administer of system security`
		(Optional) Assigns a description to the privilege.
		• *string*—Description to add to the privilege.

Step 4	**`privilege`** *`privilege-name`* **`operation`** *`operation-name`*
	Example:
	`se-10-0-0-0(config)# privilege security-privilege operation security.configuration`
		(Optional) Assigns an operation to the privilege:
		• *operation-name*—Operation to associate with the privilege.

Step 5	**`privilege`** *`privilege-name`* **`member`** *`privilege-name2`*
	Example:
	`se-10-0-0-0(config)# privilege security-privilege include manage-users`
		(Optional) Includes or nests another privilege into this privilege:
		• *privilege-name2*—Privilege to include or nest into this privilege.

Step 6	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 7	**`show operations`**
	Example:
	`se-10-0-0-0# show operations`
		(Optional) Displays information about all operations.

Step 8	**`show operation detail`** *`operation-name`*
	Example:
	`se-10-0-0-0# show operation detail security.configuration`
		(Optional) Displays information about the specified operation:
		• *operation-name*—Label used to identify and configure a new or existing operation.

	Command or Action	Purpose
Step 9	**show privileges** **Example:** `se-10-0-0-0# show privilege`	(Optional) Displays information about all privileges.
Step 10	**show privilege detail** *privilege-name* **Example:** `se-10-0-0-0# show privilege detail sales_vp`	(Optional) Displays information about the specified privilege: • *privilege-name*—Label used to identify and configure a new or existing privilege.

Examples

The following is sample output from the **show operations** command:

```
se-10-0-0-0# show operations
show operations
broadcast.local
broadcast.remote
call.control
database.enterprise
group.configuration
network.location
prompt.modify
report.historical.manage
report.historical.view
report.realtime
report.voicemail
restriction.tables
script.modify
security.aaa
security.access
security.password
security.pin
services.configuration
services.exec
services.manage
site.configuration
software.install
spokenname.modify
system.application
system.backup
system.calendar
system.configuration
system.debug
system.documents
system.numbers
system.sessions
system.view
user.configuration
user.mailbox
user.notification
user.password
user.pin
user.remote
user.supervisor
voicemail.configuration
voicemail.imap.user
voicemail.lists.private.view
voicemail.lists.public
voicemail.mwi
webapp.control
webapp.modify

46 total operation(s)
```

The following is sample output from the **show operation detail** command:

```
se-10-0-0-0# show operation detail user.password
Operation:          user.password
Description:        Set and reset passwords for other users
CLI:
                    config-user-password
                    exec-configure-terminal
                    exec-copy-running-config-startup-config
                    exec-show-user-auth
                    exec-user-password
                    exec-write

6 total command(s)
```

The following is sample output from the **show privileges** command:

```
se-10-0-0-0# show privileges
ManagePrompt
ManagePublicList
ViewHistoricalReports
ViewPrivateList
ViewRealTimeReports
broadcast
local-broadcast
manage-password
manage-users
superuser
vm-imap

11 total privilege(s)
```

The following is sample output from the **show privilege detail** command:

```
se-10-0-0-0# show privilege detail ManagePrompt
Privilege:           ManagePrompt
Description:          Privilege to create, modify, or delete system prompts
Privilege Members:  user1, user2
Operations:        prompt.modify system.debug
```

Configuring Accounting Event Logging

AAA accounting logs contain information that enables you to easily:

- Audit configuration changes
- Maintain security
- Accurately allocate resources
- Determine who should be billed for the use of resources

You can configure AAA accounting to log the following types of events:

- Logins—All forms of system access except IMAP, including access to the CLI, GUI, TUI, and VVE, when a login is required.
- Logouts—All forms of system access except IMAP, including access to the CLI, GUI, TUI, and VVE, when a login is required before logout.
- Failed logins—Failed login attempts for all forms of system access except IMAP, including access to the CLI, GUI, TUI, and VVE, when a login is required.
- Configuration mode commands—Any changes made to the Cisco Unity Express configuration using any interface except IMAP (CLI, GUI, TUI, and VVE).
- EXEC mode commands—Any commands entered in Cisco Unity Express EXEC mode using any interface except IMAP (CLI, GUI, TUI, and VVE).
- System startups—System startups, which include information about the system's software version, installed licenses, installed packages, installed languages, and so on.
- System Shutdowns—System shutdowns, which include information about the system's software version, installed licenses, installed packages, installed languages, and so on.
- IMAP—Access to the IMAP system.

In addition to information specific to the type of action performed, the accounting logs also indicate:

- User that authored the action
- Time when the action was executed
- Time when the accounting record was sent to the server

The detailed content of the log entries is explained in the "Examples" section on page 21.

Note Account logging is not performed during the system power-up playback of the startup configuration. When the system boots up, the startup-config commands are not recorded.

Configuring Accounting Event Logging

SUMMARY STEPS

1. **config t**
2. **aaa accounting enable**
3. **aaa accounting event**
4. **login**
5. **logout**
6. **login-fail**
7. **config-commands**
8. **exec-commands**
9. **system-startup**
10. **system-shutdown**
11. **end**
12. **show aaa accounting event**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`aaa accounting enable`**
	Example:
	`se-10-0-0-0(config)# aaa accounting enable`
		Enables the recording of AAA account events.

Step 3	**`aaa accounting event`**
	Example:
	`se-10-0-0-0(config)# aaa accounting event`
		Enters aaa-accounting submode to enable you to configure event filtering for accounting packets.

Step 4	**`login`**
	Example:
	`se-10-0-0-0(config)# login`
		Enables the logging of logins.

Step 5	**`logout`**
	Example:
	`se-10-0-0-0(config)# logout`
		Enables the logging of logouts

Step 6	**`login-fail`**
	Example:
	`se-10-0-0-0(config)# login-fail`
		Enables the logging of failed logins.

Step 7	**`config-commands`**
	Example:
	`se-10-0-0-0(config)# config-commands`
		Enables the logging of configuration mode commands.

Step 8	**`exec-commands`**
	Example:
	`se-10-0-0-0(config)# exec-commands`
		Enables the logging of configuration mode commands.

Step 9	**`system-startup`**
	Example:
	`se-10-0-0-0(config)# system-startup`
		Enables the logging of system startups.

Step 10	**`system-shutdown`**
	Example:
	`se-10-0-0-0(config)# system-shutdown`
		Enables the logging of system shutdowns.

	Command or Action	Purpose

Step 11	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 12	**show aaa accounting event** `se-10-0-0-0# show aaa accounting`	(Optional) Displays the AAA accounting events that are designated to be logged.

Examples

The following is sample output from the **show aaa accounting event** command:

```
se-10-0-0-0# show aaa accounting event
Event              State      Description
login              Enabled    Log accounting events for successful login
logout             Enabled    Log accounting events for user logout
login-fail         Enabled    Log accounting events for failed login attempts
config-commands    Enabled    Log accounting events for any chanes to configuration
exec-commands      Enabled    Log accounting events for execution of commands
system-startup      Enabled    Log accounting events for system startup
system-shutdown    Enabled    Log accounting events for system shutdown
imap               Enabled   Log accounting events for all imap events
```

Configuring Console Authentication

By default, console authentication is disabled, allowing any user logging into the system through the console to have superuser privileges and to log in without providing a username or password.

Therefore, to protect your console from unauthorized access, you must enter the **login** command in config-line mode, as described below.

Note To see whether authentication is enabled for the console, you must view the running configuration.

Specifying Whether the Console Connection is Subject to Authentication

SUMMARY STEPS

1. **config t**
2. **line console**
3. **login**
4. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`line console`**
	Example:
	`se-10-0-0-0(config)# line console`
		Enters config-line mode to enable you to specify whether the console connection is subject to authentication.

Step 3	**`login`**
	Example:
	`se-10-0-0-0(config-line)# line console`
		Requires that any user logging in through the console connection is subject to authentication. The **no** or **default** form of this command disables authentication for the console.

Step 4	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Configuring the Administration via Telephone Application

The Administration via Telephone (AvT) application is a telephony-based interface that offers the following capabilities:

- Administrators can record new audio prompts or delete existing custom audio prompts without using a PC or sound-editing software, such as with the telephone user interface (TUI). These prompts can then be used in various Cisco Unity Express application scripts, such as the Welcome prompt in the default auto-attendant. The Emergency Alternate Greeting (EAG) is an option within the AvT that allows subscribers to record, modify, and enable or disable a special greeting to be played before the regular greeting, notifying callers of some temporary event or message.
- Administrators can rerecord existing prompts.
- Administrators can send broadcast messages. Subscribers who have the broadcast privilege can access a limited set of AvT capabilities.
- Administrators can record spoken names for remote locations and remote subscribers.

The Cisco Unity Express module installation automatically configures the AvT application.

Only users with administrative (superuser) privileges or prompt management (ManagePrompt) privileges have access to the AvT. (See "Adding and Modifying a Group" on page 7 for information about assigning privileges.) When a caller dials the AvT number, the AvT authenticates the caller by requesting the caller's extension and PIN. The AvT disconnects the caller if the caller does not have administrative authority.

To configure the AvT access telephone number, see "Configuring SIP Triggers for the Applications" on page 39 or "Configuring JTAPI Triggers for the Applications (Cisco Unified Communications Manager Only)" on page 43.

Configuring Triggers

After you configure the AvT application, you must configure the system must to start the AvT application when a specific signal, or trigger, is invoked. The trigger is a telephone number and can be configure for either the SIP or JTAPI subsystems. When a caller dials a specified telephone number, the SIP or JTAPI subsystem starts the AvT application. To configure SIP and JTAPI triggers for the AvT application, see "Managing Triggers" on page 38.

The number of triggers supported depends on the Cisco Unity Express hardware. For more information, see *Release Notes for Cisco Unity Express*. See "Advanced Configuration" on page 1 for procedures to configure multiple triggers for an application.

This configuration is required for Cisco Unified CME and Cisco Unified Communications Manager (SRST mode).

CHAPTER 10

Configuring Auto Attendants

This chapter contains the following procedures for configuring Cisco Unity Express system components:

- "Configuring and Managing the Auto-Attendant Application" section on page 1
- "Configuring Auto-Attendant Scripts" section on page 9

Configuring and Managing the Auto-Attendant Application

After the Cisco Unity Express software is installed on the system, the auto-attendant application that ships with Cisco Unity Express must be configured using the procedures described in this section.

Default Prompts

The administrator can download, copy, and upload only the following prompts: **AAWelcome.wav**, **AAHolidayPrompt.wav**, **AABusinessOpen.wav**, and **AABusinessClosed.wav**.

To customize the default welcome prompt, see "Customizing the Default Auto-Attendant Welcome Prompt" on page 7.

Triggers

After you configure the auto-attendant application, you must configure the system must to start the auto-attendant application when a specific signal, or trigger, is invoked. The trigger is a telephone number and can be configure for either the SIP or JTAPI subsystems. When a caller dials a specified telephone number, the SIP or JTAPI subsystem starts the auto-attendant application. To configure SIP and JTAPI triggers for the auto-attendant application, see "Managing Triggers" on page 38.

Cisco Unity Express supports a maximum of 8 or 12 SIP or JTAPI triggers for all applications combined, depending on the hardware platform. See "Advanced Configuration" on page 1 for procedures to configure multiple triggers for an application.

This configuration is required for Cisco Unified CME and Cisco Unified Communications Manager (SRST mode).

Default Auto-Attendant Script aa.aef

The default auto-attendant script provided with Cisco Unity Express is named **aa.aef**. This file resides in the system directory, and cannot be downloaded, copied, or uploaded. This default auto-attendant application is also known as the “system script” or “system AA.” This default script supports basic functions such as dial-by-extension, dial-by-spelling username, and call operator functions. If additional functionality is required, then you must create a customized auto-attendant script.

The aa.aef script supports holiday lists and business-hours schedules. When a call reaches the auto attendant, the system checks if the current day is a holiday. If it is, the system plays a holiday prompt called **AAHolidayPrompt.wav**, which states “We are closed today. Please call back later.” The script then executes the next operation in the script.

If the current day is not a holiday, the system checks if the business is open or not. If the business is open, the system plays the **AABusinessOpen.wav** prompt, which is an empty file. If the business is closed, the system plays the **AABusinessClosed.wav** prompt, which states “We are currently closed. Please call back later.”

Following are the parameters that may be configured for the aa.aef script:

- welcomePrompt—default: AAWelcome.wav
- operExtn—default: none
- holidayPrompt—default: AAHolidayPrompt.wav
- businessOpenPrompt—default: AABusinessOpen.wav
- businessClosedPrompt—default: AABusinessClosed.wav
- businessSchedule—default: systemschedule
- disconnectAfterMenu—default: false
- allowExternalTransfers—default: false

To modify any of these prompts, see “Configuring Auto-Attendant Prompts” on page 6.

To create customized script files, see “Configuring Auto-Attendant Scripts” on page 9.

To create a business-hours schedule, see “Configuring Business Hours” on page 52.

To create a holiday list, see “Configuring Holiday Lists” on page 47.

Simple Auto-Attendant Script aasimple.aef

Another simple system script **aasimple.aef** is available for the auto-attendant application. This script can be associated with an auto-attendant application and cannot be deleted or downloaded.

This script makes the same checks for an alternate greeting, holiday hours, and business schedule as does the **aa.aef** script.

The initial greeting prompt is a configurable parameter. Use the GUI options or CLI commands to configure the prompt with the names and extensions of the people who can be reached with the auto-attendant application. For example, the prompt may play "For Al, press 10. For Bob, press 20. For the operator, press 0."

The caller can enter an extension without pressing the pound key (#). After the caller enters the extension, the script attempts to transfer to that extension. The script does not attempt to validate the extension before the transfer.

The script has another parameter (extensionLength) that specifies the length of the extension used by the Cisco Unity Express system. This parameter must be configured correctly for the script to be able to do a successful transfer.

Following are the parameters that may be configured for the aasimple.aef script:

- welcomePrompt—default: AAWelcome.wav
- operExtn—default: 0
- MaxRetry—default: 3
- holidayPrompt—default: AAHolidayPrompt.wav
- businessOpenPrompt—default: AABusinessOpen.wav
- businessClosedPrompt—default: AABusinessClosed.wav
- playExtensionsPrompt—default: AASPlayExtensions.wav
- extensionLength—default: 1
- businessSchedule—default: systemschedule
- disconnectAfterMenu—default: false
- allowExternalTransfers—default: false

To modify any of these prompts, see "Configuring Auto-Attendant Prompts" on page 6.

To create customized script files, see "Configuring Auto-Attendant Scripts" on page 9.

To create a business-hours schedule, see "Configuring Business Hours" on page 52.

To create a holiday list, see "Configuring Holiday Lists" on page 47.

Configuring Other Auto-Attendant Parameters

To configure the auto-attendant access telephone number, see "Configuring SIP Triggers for the Applications" on page 39 or "Configuring JTAPI Triggers for the Applications (Cisco Unified Communications Manager Only)" on page 43.

The commands are used in both EXEC and configuration modes.

See "Managing Applications" on page 31 for procedures to configure user-defined parameters.

Required Data for This Procedure

The following information is required to configure auto-attendant:

- To use your own welcome greeting, create a .wav file containing the prerecorded welcome greeting. This file must be uploaded to the Cisco Unity Express module so that it can be located and saved in the auto-attendant script. Alternatively, you can use the Administration via Telephone (AvT) application to record the welcome greeting. See "Recording an Auto-Attendant Greeting or Prompt File" on page 7 for guidelines on recording a greeting. See "Uploading the Auto-Attendant Greeting or Prompt File" on page 7 for the procedure to upload the prompt to Cisco Unity Express.
- Application name.
- Number of times the auto-attendant will replay instructions to a caller before the call is disconnected. This count begins when the caller moves past the main menu and starts to hear instructions for a submenu. The main menu will play five times and then, if the caller makes no choice or incorrect choices, will transfer to the operator.

- Extension number of the operator. Auto attendant dials this extension when the caller presses the zero ("0") button.
- The customized .wav filename if you change the default Auto Attendant welcome prompt.
- Telephone number that the caller must dial to reach the auto-attendant. In many cases, this number is your company telephone number.
- Maximum number of callers that auto-attendant can handle simultaneously. See "Sharing Ports Among Applications and Triggers" on page 2 for guidelines on assigning this value.

SUMMARY STEPS

1. **config t**
2. **ccn application autoattendant**
3. (Optional) **description "***text***"**
4. **maxsessions** *number*
5. **parameter** "*name*" **"***value***"**
6. **end**
7. **exit**
8. **show ccn application**
9. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`ccn application autoattendant`**
	Example:
	`se-10-0-0-0(config)# ccn application AutoAttendant`
		Specifies the application to configure and enters application configuration mode. Use the full name of the application for the *full-name* argument.

Step 3	**`description`** "*`text`*" **Example:** `se-10-0-0-0(config-application)# description "Auto Attendant"`	(Optional) Enters a description of the application. Use double quotes around the text.

Step 4	**`maxsessions`** *`number`*
	Example:
	`se-10-0-0-0(config-application)# maxsessions 4`
		Specifies the number of callers who can access this application simultaneously. See "Sharing Ports Among Applications and Triggers" on page 2 for guidelines on assigning this value.

	Command or Action	Purpose

Step 5	**parameter** “*name*” “*value*”
	Example:
	`se-10-0-0-0(config-application)#` **`parameter “operExtn” “1000”`**
	`se-10-0-0-0(config-application)#` **`parameter “MaxRetry” “3”`**
	`se-10-0-0-0(config-application)#` **`parameter “welcomePrompt” “ciscowelcome.wav”`**
		Specifies parameters for the application. Each parameter must have a name and a value, which is enclosed in double quotes. The parameters below are case-sensitive. For more information, see the “Managing Applications” section on page 31.
		For the auto-attendant application, the parameters are:
		• **“operExtn”**—Extension that the system dials when a caller presses “0” to reach the auto-attendant operator. This is also the extension where the call will be transferred to if there is no caller input (timeout).
		• **“MaxRetry”**—Maximum number of times a caller can incorrectly choose a submenu option before the application disconnects the call. The default is 3.
		• **“welcomePrompt”**—The .wav filename containing the customized AA welcome prompt that is uploaded to the Cisco Unity Express module.
		• **“busOpenPrompt”**—The .wav filename containing the customized AA business open prompt. The default is AABusinessOpen.wav.
		• **“busClosedPrompt”**—The .wav filename containing the customized AA business closed prompt. The default is AABusinessClosed.wav.
		• **“businessSchedule”**—The .filename containing the business open and closed times. The default is systemschedule.
		• **“holidayPrompt”**—The .wav filename containing the customized AA holiday message prompt. The default file is AAHolidayPrompt.wav.
		• **“disconnectAfterMenu”**—Indicator that disconnects the caller after the menu is played. The default status is false.
		• **“allowExternalTransfers”**—Indicator that permits external transfers. The default status is false.

Step 6	**end**
	Example:
	`se-10-0-0-0(config-application)# end`
		Exits application configuration mode.

	Command or Action	Purpose

Step 7	**`exit`**
	Example:
	`se-10-0-0-0(config)# exit`
		Exits configuration mode.

Step 8	**`show ccn application`**
	Example:
	`se-10-0-0-0#` **`show ccn application`**
		Displays details about each configured application.

Step 9	**`copy running-config startup-config`**
	Example:
	`se-10-0-0-0#` **`copy running-config startup-config`**
		Copies the configuration changes to the startup configuration.

Examples

The following example illustrates the auto-attendant information from the **show ccn application** output:

```
se-10-0-0-0# show ccn application

Name:                                   autoattendant
Description:                            autoattendant
Script:                                 aa.aef
ID number:                              3
Enabled:                                yes
Maximum number of sessions:             8
busOpenPrompt:                          AABusinessOpen.wav
operExtn:                               1000
welcomePrompt:                          AAWelcome.wav
disconnectAfterMenu:                    false
busClosedPrompt:                        AABusinessClosed.wav
allowExternalTransfers:                 false
holidayPrompt:                          AAHolidayPrompt.wav
businessSchedule:                       systemschedule
MaxRetry:                               3
se-10-0-0-0#
```

Configuring Auto-Attendant Prompts

Cisco Unity Express supports customized greeting and prompt files. The number of greetings and prompts per language installed supported depends on the Cisco Unity Express hardware module and the version. To determine how many prompts your hardware supports, see the release notes for the Cisco Unity Express release version you are using.

Customizing prompts requires the following procedures:

- Recording an Auto-Attendant Greeting or Prompt File, page 7 (Required)
- Customizing the Default Auto-Attendant Welcome Prompt, page 7 (Required)
- Uploading the Auto-Attendant Greeting or Prompt File, page 7 (Required)
- Downloading an Auto-Attendant Greeting or Prompt File, page 8 (Optional)
- Renaming an Auto-Attendant Greeting or Prompt File, page 8 (Optional)

- Deleting an Auto-Attendant Greeting or Prompt File, page 8 (Optional)

Recording an Auto-Attendant Greeting or Prompt File

Two methods are available to create auto-attendant greeting and prompt files:

- Create a.wav file with the following format: G.711 u-law, 8 kHz, 8 bit, Mono. The file cannot be larger than 1 MB (about 2 minutes). After recording the greeting, use the GUI or Cisco Unity Express CLI **ccn copy url** command to copy the file in to the Cisco Unity Express system. See the next section, "Uploading the Auto-Attendant Greeting or Prompt File," for the upload procedure.
- Use the AvT on the TUI to record the greeting or prompt. Dial the AvT telephone number and select the option to record a greeting. When finished recording, save the file. AvT automatically saves the file in Cisco Unity Express.

  The AvT prompt filename has the format UserPrompt_DateTime.wav, for example: UserPrompt_11152003144055.wav. You may want to use CLI commands or GUI options to rename the file with a meaningful name.

  Cisco recommends using the AvT on the TUI to record greetings and prompts because the AvT provides higher sound quality compared to .wav files recorded using other methods.

Uploading the Auto-Attendant Greeting or Prompt File

After recording the .wav greeting or prompt file, upload the file using the **ccn copy url** command in Cisco Unity Express EXEC mode:

ccn copy url *source-ip-address* **prompt** *prompt-filename*

Example:

```
se-10-0-0-0# ccn copy url ftp://10.100.10.123/AAprompt1.wav prompt AAprompt1.wav
se-10-0-0-0# ccn copy url http://www.server.com/AAgreeting.wav prompt AAgreeting.wav
```

This command is equivalent to using the GUI option **Voice Mail > Prompts** and selecting **Upload**.

An error message appears if you try to upload more than the maximum number of prompts allowed on your Cisco Unity Express module.

Customizing the Default Auto-Attendant Welcome Prompt

The default AA greeting included with the system lasts two seconds and plays the prompt "Welcome to the AutoAttendant." You can record a custom welcome prompt specifically for your system to welcome callers.The default .wav filename is **AAWelcome.wav**. While the default welcome prompt in the .wav file lasts two seconds long, you can record a new welcome prompt up to 120 seconds long. The welcome prompt .wav file can be up to 1 MB in G.711 u-law format.

If you create a customized welcome prompt, use a different .wav filename and upload the new .wav file to the Cisco Unity Express module. Do not overwrite the default **AAWelcome.wav** filename. For information about uploading the welcome prompt .wav file, see the "Uploading the Auto-Attendant Greeting or Prompt File" section on page 7.

Note The .wav file for the welcome prompt is not interruptible, meaning that the longer the recorded welcome prompt is, the longer callers must wait before being able to enter digits to reach other extensions. We recommend you record a short welcome prompt so that callers can access the voicemail system quickly.

Following this welcome prompt, the default script plays the menu announcement listing the menu options for callers. These are not customizable prompts within the default auto-attendant provided with the system. Note that if a caller uses the dial-by-extension option, the system will attempt to transfer to any extension, including extensions not defined using Cisco Unity Express. To prevent callers from transferring to extensions not defined using Cisco Unity Express, configure class of restrictions (COR) on the dial-peer, or develop a custom script to prevent the option.

Downloading an Auto-Attendant Greeting or Prompt File

Greetings and prompts can be copied from the auto-attendant and stored to another server or PC.

To copy a greeting or prompt file, use the **ccn copy prompt** command in Cisco Unity Express EXEC mode:

ccn copy prompt *prompt-filename* **url** ftp:**//***destination-ip-addres*s**/***prompt-filename* [**language** *xx_YY*] [**username** *name* **password** *password*]

where *prompt-filename* is the file to be copied, *destination-ip-address* is the IP address of the FTP server, *xx_YY* is the language of the prompt file, *name* is the FTP server login ID, and *password* is the FTP server password.

Example:

```
se-10-0-0-0# ccn copy prompt AAprompt2.wav url ftp://10.100.10.123/AAprompt2.wav
```

Renaming an Auto-Attendant Greeting or Prompt File

To rename an auto-attendant greeting or prompt file, use the **ccn rename prompt** command in Cisco Unity Express EXEC mode:

ccn rename prompt *old-name new-name*

where *old-name* is the existing filename and *new-name* is the revised name.

Example:

```
se-10-0-0-0# ccn rename prompt AAmyprompt.wav AAmyprompt2.wav
```

Deleting an Auto-Attendant Greeting or Prompt File

To delete an auto-attendant greeting or prompt file from Cisco Unity Express, use the **ccn delete** command in Cisco Unity Express EXEC mode:

ccn delete prompt *prompt-filename*

where *prompt-filename* is the file to be deleted.

Example:

```
se-10-0-0-0# ccn delete prompt AAgreeting.wav
```

Configuring Auto-Attendant Scripts

Cisco Unity Express supports customized script files. The number of customized scripts supported depends on the Cisco Unity Express hardware module and the version. To determine how many customized scripts your hardware supports, see the release notes for the Cisco Unity Express release version you are using.

Customizing scripts involves the following procedures:

- Creating an Auto-Attendant Script File, page 9
- Uploading the Auto-Attendant Script File, page 9
- (Optional) Downloading an Auto-Attendant Script File, page 10
- (Optional) Deleting an Auto-Attendant Script File, page 10

Creating an Auto-Attendant Script File

You can create an autoattendant script file using either the:

- Full-featured Cisco Unity Express GUI script editor, which is based on Microsoft Windows
- Editor Express

For guidelines and procedures for using the full-featured Cisco Unity Express GUI script editor to create a script file, see *Cisco Unity Express Guide to Writing and Editing Scripts*.

For instructions on how to use Editor Express, see the *Cisco Unity Express GUI Administration Guide*.

The script file cannot be larger than 256 KB.

After creating the script, use the GUI or Cisco Unity Express **ccn copy** command to copy the file to the Cisco Unity Express system. See the next section, "Uploading the Auto-Attendant Script File," for the upload procedure.

Uploading the Auto-Attendant Script File

After recording the .wav greeting or prompt file, upload the file using the **ccn copy url** command in Cisco Unity Express EXEC mode:

ccn copy url ftp://*source-ip-address*/script-filename.aef script script-filename.aef [username username password password]

Example:

```
se-10-0-0-0# ccn copy url ftp://10.100.10.123/AVTscript.aef script AVTscript.aef
se-10-0-0-0# ccn copy url http://www.server.com/AVTscript.aef script AVTscript.aef
```

This command is equivalent to using the GUI option **Voice Mail > Scripts** and selecting **Upload**.

An error message appears if you try to upload more than the maximum number of scripts allowed on your Cisco Unity Express module.

Downloading an Auto-Attendant Script File

Scripts can be copied from the auto-attendant and stored on another server or PC.

To copy a script file, use the **ccn copy script** command in Cisco Unity Express EXEC mode:

ccn copy script *script-filename* **url ftp://***destination-ip-address***/***script-filename*

Example:

```
se-10-0-0-0# ccn copy script AVTscript.aef url ftp://10.100.10.123/AVTscript.aef
```

Deleting an Auto-Attendant Script File

To delete an auto-attendant script file from Cisco Unity Express, use the **ccn delete** command in Cisco Unity Express EXEC mode:

ccn delete script *script-filename*

Example:

```
se-10-0-0-0# ccn delete script AVTscript.aef
Are you sure you want to delete this script? (y/n)
```

CHAPTER 11

Configuring VoiceView Express

This chapter describes the procedures for configuring VoiceView Express on Cisco Unity Express and includes the following sections:

To configure this feature from the GUI, use the **Voice Mail > VoiceView Express** option.

Overview of VoiceView Express

The VoiceView Express feature allows voice-mail subscribers to browse, listen, send messages, and manage their voice mail messages from their Cisco IP phone display and soft keys. This feature is an alternative to the telephone user interface (TUI) for performing common tasks.

VoiceView Express is available for Cisco Unified Communications Manager Express and Cisco Unified Communications Manager systems. VoiceView is not available in Cisco Unified Communications Manager SRST mode.

VoiceView Express is enabled by default.

VoiceView Express is supported on selected Cisco Unified IP phones. See the *Release Notes for Cisco Unity Express 8.6* for more information. For details on using the VoiceView Express features, see the *Cisco Unity Express VoiceView Express Quick Start Guide- Release 3.2*.

VoiceView Express Session Count

The maximum number of simultaneous VoiceView Express sessions depends on the size of the network modules and the Cisco Unity Express release version being used. The number of simultaneous VoiceView Express sessions supported depends on the Cisco Unity Express hardware module and the version. To determine how many VoiceView Express sessions your hardware supports, see the release notes for the Cisco Unity Express release version you are using.

The system counts VoiceView Express sessions separately from graphical user interface (GUI) sessions.

When a subscriber is listening to or recording a voice message or greeting with VoiceView Express, the system counts the session as a VoiceView Express session and a TUI session.

If the subscriber is browsing through voice messages on the VoiceView Express phone screen, the system counts the session as a VoiceView Express session.

Configuring Cisco Unified Communications Manager for VoiceView Express

The VoiceView Express service URL configured on Cisco Unified Communications Manager must be as follows: **http://***Cisco-Unity-Express-hostname***/voiceview/common/login.do**.

The Cisco Unified Communications Manager administrator must ensure that all phones configured to use VoiceView Express are owned by the JTAPI user configured on Cisco Unity Express. VoiceView Express uses the JTAPI username and password to become a trusted phone client. Use the following procedures to add the VoiceView Express service to the phones:

1. Create an IP phone service—In the Cisco Unified Communications Manager administration screen, click **Feature > Cisco IP Phone Services**. Click **Add a New IP Phone Service**. Enter the name that you want the voice-mail subscribers to see on their phone screens. Enter the description that you want to appear on the subscribers's phone message when they subscribe to VoiceView Express. Enter the IP phone service URL described above. Click **Insert**.
2. Add the IP phone service to a phone— Locate a phone in the Cisco Unified Communications Manager system. Click on the phone to open the phone's configuration page. Click **Subscribe/Unsubscribe Services** in the upper-right corner of the screen. In the drop-down menu, find the IP phone service name that you created earlier. Click **Continue**. Click **Subscribe**.
3. Enable **Web Access** on all phones using the phone device configuration in Cisco Unified Communications Manager.
4. Assign the phone to the JTAPI user—Go to the JTAPI user's configuration page. Click **Device Association**. Associate the phone as a controlled device.
5. Repeat procedures 2, 3 and 4 for each phone that requires VoiceView Express service.

Configuring Cisco Unified Communications Manager Express for VoiceView Express

The Authentication Manager is a network server that handles authentication requests for IP phone tasks. The IP phone learns the authentication server URL during the phone's registration process.

Cisco Unified Communications Manager Express (Cisco Unified CME) does not have an authentication server. Cisco Unity Express starts an authentication server that acts as the primary authentication server for VoiceView Express.

The Cisco Unified CME administrator must ensure that Cisco Unified CME authentication server URL points to the Cisco Unity Express authentication server. In addition, if using Cisco Unified CME 8.0 or later, Web Access must be enabled. The Cisco Unified CME command syntax required is different depending on the Cisco Unity Express version being used. For more information, see "Configuring the Phone-Authentication Service" section on page 5.

Note To activate the URL configuration, reboot the phones.

Session Termination

The administrator can configure the maximum number of minutes a VoiceView Express session can remain idle. The timeout is a system-wide parameter and cannot be configured for individual subscribers or groups. The default limit per session is 5 minutes.

Active VoiceView Express sessions are terminated under the following scenarios:

- A new TUI or VoiceView Express session preempts and terminates an existing VoiceView Express session.
- An active VoiceView Express session can be terminated using the CLI command **service voiceview session terminate** *mailbox-id* in Cisco Unity Express EXEC mode. See "Monitoring Active IMAP and VoiceView Express Sessions" on page 7 for more information.

Configuring VoiceView Express

Use the following procedure to configure system-wide VoiceView Express parameters.

VoiceView Express is enabled by default.

Prerequisites

- For Cisco Unified Communications Manager systems: ensure that all phones configured to use VoiceView Express are owned by the JTAPI user configured on Cisco Unity Express.
- For Cisco Unified Communications Manager Express systems: ensure that the Cisco Unified Communications Manager Express authentication server URL points to Cisco Unity Express.

Required Data for This Procedure

Number of minutes a VoiceView Express session can be inactive before the system disconnects the session.

SUMMARY STEPS

1. **config t**
2. **service voiceview**
3. **enable**
4. **session idletimeout** *minutes*
5. **end**
6. **end**
7. (Optional) **show voiceview configuration**
8. (Optional) **show voiceview sessions**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**service voiceview** **Example:** `se-10-0-0-0(config)# service voiceview`	Enters VoiceView Express configuration mode.
Step 3	**enable** **Example:** `se-10-0-0-0(config-voiceview)# enable`	Enables the VoiceView Express feature for all the subscribers served by the Cisco Unity Express system. The default state is enabled.
Step 4	**session idletimeout** *minutes* **Example:** `se-10-0-0-0(config-voiceview)# session idletimeout 10`	Specifies the number of minutes a VoiceView Express session can be idle. After this maximum is reached, the system automatically disconnects the session. Valid values are 5 to 30 minutes. The default is 5 minutes.

Step 5	**end**
	Example:
	`se-10-0-0-0(config-voiceview)# end`
		Exits VoiceView Express configuration mode.

Step 6	**end** **Example:** `se-10-0-0-0(config)#` end	Exits configuration mode.
Step 7	**show voiceview configuration** **Example:** `se-10-0-0-0# show voiceview configuration`	(Optional) Displays the VoiceView Express configuration parameters.
Step 8	**show voiceview sessions** **Example:** `se-10-0-0-0# show voiceview sessions`	(Optional) Displays all active VoiceView Express sessions.

Examples

The following is sample output for the **show voiceview configuration** command:

```
se-10-0-0-0# show voiceview configuration
Phone service URL:       http://<CUE-hostname>/voiceview/common/login.do
Enabled:                 Yes
Idle Timeout (minutes):  10
```

The following is sample output for the **show voiceview sessions** command:

```
se-10-0-0-0# show voiceview sessions

Mailbox      RTP     User ID      Phone MAC Address
1013         Yes     user1        0015.C68E.6C1E
1016         No      user5        0015.629F.8706
1015         No      user3        0015.63EE.3790
1014         Yes     user6        0015.629F.888B
1009         No      user9        0015.6269.57D2
1012         No      user10       0016.4676.4FCA
1001         No      user8        0009.B7F7.5703
1004         Yes     user11       000C.30DE.5EA8

8 session(s)
```

3 active RTP stream(s)

Configuring the Phone-Authentication Service

Prior to release 7.0, Cisco Unity Express provided an authentication service that handled only VoiceView Express authentication requests from the IP phones during the playback and recording of voice messages and greetings. There was no authentication service for any other IP phone applications that required audio streaming.

Beginning in release 7.0, the phone authentication service was provided as part of IOS. As part of IOS, the authentication service to be used with any phone service application on the network. For release 7.0 and later, Cisco Unified CME acts as the primary authentication server.

Prerequisites For Release 7.0 and Later

On Cisco Unified CME, you must perform the following steps before configuring the phone authentication service on Cisco Unity Express:

- Configure the URL for the authentication service using the following command:

  url authentication http://*cme-ip-address***/CCMCIP/authenticate.asp**

- Configure the authentication username and password using the following command:

  authentication credential *username password*

  This username and password must match the username and password configured in the following procedure.

- (Cisco Unified CME 8.0 and later) Enable Web Access using the following command in telephony-service configuration mode:

  service phone webAccess 0

Prerequisites for Release 3.2 and Earlier

On Cisco Unified CME, you must perform the following step before configuring the phone authentication service on Cisco Unity Express:

- Configure the URL for the authentication service using the following command:

  url authentication http://*cue-ip-address***/voiceview/authentication/authenticate.do**

Perform the following steps to configure the phone authentication service on Cisco Unity Express.

SUMMARY STEPS

1. **config t**
2. **site name local**
3. **phone-authentication username** *username* **password** *password*
4. **end**
5. **show phone-authentication configuration**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`site name local`**
	Example:
	`se-10-0-0-0(config)# site name local`
		Configures a Cisco Unified CME site and enters site configuration mode.

Step 3	**`phone-authentication username`** *`username`* **`password`** *`password`*
	Example:
	`se-10-0-0-0(config-site)# phone-authentication username user-8 password mypass`
		Sets the authentication username and password.

Step 4	**`end`**
	Example:
	`se-10-0-0-0(config-site)# end`
		Exits authentication mode.

Step 5	**`show phone-authentication configuration`**
	Example:
	`se-10-0-0-0# show phone-authentication configuration`
		(Optional) Displays the VoiceView Express authentication parameters.

Example

The following is sample output for the show phone-authentication configuration command:

```
se-10-0-0-0# show phone-authentication configuration

Authentication service URL: http://<CUE-hostname>/voiceview/authentication/authenticate.do
Authentication Fallback Server URL: http://172.16.10.10/auth-server/authenticate.asp
```

Displaying and Terminating VoiceView Express Sessions

To terminate an active VoiceView Express session, see "Monitoring Active IMAP and VoiceView Express Sessions" on page 7.

CHAPTER 12

Configuring Message Notification

This chapter describes the procedures for implementing the Cisco Unity Express message notification feature and includes the following sections:

To configure this feature from the GUI, use the **Voice Mail > Message Notification** option.

Overview of Message Notification

Beginning in version 3.1, Cisco Unity Express provides several options for notifying subscribers of new messages in their voice mailboxes.

The system generates notifications for all types of messages, including nondelivery receipts (NDRs), when the messages arrive in a subscriber's mailbox. Delayed delivery receipts (DDRs), broadcast messages, live-recorded messages, and existing messages marked as new do not generate notifications.

The system generates a notification when a new voice-mail message arrives in a subscriber's mailbox. These notifications can be sent to the following devices:

- Cell phone
- Home phone
- Work phone
- Numeric pager
- Text pager
- E-mail inbox

Each device has a configurable schedule during which notifications can be received. For phone devices (work phone, home phone, and cell phone), the subscriber has the option to disable notification or to log in to the mailbox during the notification call.

A notification profile contains the configuration settings for each subscriber or group. See "Notification Profile" on page 2 for more information about the notification profile.

Configuring the message notification features requires setting several system-wide parameters. See "System-Wide Message Notification Settings" on page 2 for the procedure to set these parameters.

Sending and receiving message notifications differs by device type. See "Sending and Receiving Message Notifications" on page 7 for a description of these processes.

After configuring the system-wide parameters, configure the parameters for the subscribers and groups who will have access to the message notification feature. See "Configuring Message Notification for Devices" on page 13 for these procedures.

Notification Profile

Cisco Unity Express provides a default notification profile for each subscriber and group that has a voice mailbox. The notification profile contains configuration information for message notification, such as a device type, phone number or e-mail address, notification preference, and notification schedule. Each subscriber or group can have one or more of the supported devices configured in the notification profile. After the profile information is configured, the subscriber or group will receive message notifications.

The default profile name is **vm-notif-profile**. This name cannot be changed or deleted.

Message Notification Settings

Configuring Message Notification requires the following procedures:

- Configuring system-wide settings
  - For an overview of system-wide notification settings, see System-Wide Message Notification Settings below.
  - For configuration procedures for system-side notification settings, see Configuring System-Wide Settings, page 9.
- Configuring subscriber- and device-specific settings
  - For an overview of subscriber and device-specific settings, see Subscriber and Device-Specific Settings, page 5.
  - For configuration procedures for subscriber- and device-specific settings, see Enabling Message Notification for a Subscriber or Group, page 12. and Configuring Message Notification for Devices, page 13.

System-Wide Message Notification Settings

Message notifications for the whole system use the following settings:

- Enabling the feature—Message notification is disabled by default for all subscribers and groups. Enable the feature on a system-wide basis or for specific subscribers or groups. The feature is available for all subscribers and groups who have a mailbox.

  The first time the administrator enables the feature system-wide, the feature remains disabled for all subscribers and groups. If specific subscribers or groups are to have access to message notification, the administrator can enable the feature for those subscribers or groups on an individual basis.

If the feature is disabled on a system-wide basis, the feature becomes disabled for all subscribers and groups. However, the system does not delete the device settings for the subscribers and groups. When the feature is enabled again, the system restores the settings for the subscribers and groups as they were before the system-wide disabling.

If the feature is enabled system-wide and the administrator adds a new subscriber or group, the feature is disabled for that subscriber or group.

If no SMTP server is configured when the feature is enabled system-wide, the system generates a warning message indicating that e-mail and text pager notifications will not work.

- Notification preference—The administrator can set the type of messages for which notifications will be sent: all messages or urgent messages. Urgent is the default. The administrator can change the preference for specific subscribers or groups to a value other than the system-wide setting.

  If the system-wide preference is set to "all," the administrator can set the preference for a specific subscriber or group to either "all" or "urgent." If the system-wide preference is set to "urgent," the preference for a specific subscriber or group is only "urgent."

  If the administrator changes the system-wide preference from "all" to "urgent," the system changes the preference to "urgent" for all subscribers and groups.

  If the administrator changes the system-wide preference from "urgent" to "all," the system does not change the preference for those subscribers or groups who were configured on an individual basis.

- Voice message attachments—This setting permits a voice message to be attached to a notification sent to an e-mail inbox. Notification attachments are disabled by default so that voice messages are not attached to the notification e-mail. The administrator can change this setting for specific subscribers or groups to a value other than the system-wide setting.

  If attachments are enabled system-wide, you can change the setting for a specific subscriber or group to enabled or disabled. If attachments are disabled system-wide, the attachments setting for a specific subscriber or group also is disabled.

  The system never attaches a private message to notification e-mails, regardless of this setting.

  If the administrator changes this system-wide setting from enabled to disabled, the system changes the setting to disabled for all subscribers and groups.

  If the administrator changes this system-wide setting from disabled to enabled, the system does not change the preference for those subscribers or groups who were configured on an individual basis.

- Connection timeout—This variable specifies the number of seconds a notification call will attempt to connect before the system disconnects the call and treats the call as failed. This option is available only to phone devices and numeric pagers. The range of values is 12 seconds to 96 seconds. The default value is 48 seconds.

- Logging into voice mail during an outcall—This variable permits the subscriber to log in to voice mail when answering a notification call. This option is available only for phone devices.

  If the option is enabled, the system provides the subscriber with an option to log in to voice mail to retrieve the message. If the option is disabled, the system plays a notification prompt three times before disconnecting the notification call. The system default is disabled.

- Notification message prefix text—This setting enables the administrator to append a system-wide message before a notification. This option is available in Cisco Unity Express 8.0 and later versions.

- Notification message suffix text—This setting enables the administrator to append a signature message after a notification. This option is available in Cisco Unity Express 8.0 and later versions.

- Restriction table—The restriction table controls the phone numbers that subscribers can use to send message notifications. These restrictions are available only for phone devices and numeric pagers.

The system provides a predefined table that can be modified by the administrator. The table applies to all subscribers and groups on the system. A typical use of this table is to prevent the use of long-distance or international numbers for message notifications.

The system checks the restriction table when the subscriber is assigning phone numbers to phone devices (such as a cell phone, home phone, or work phone), to a numeric pager, and before making an outcall. If a phone number is listed in the table as restricted, the system sends a message to the subscriber.

If a subscriber has a number configured for a device and the administrator later restricts that number system-wide, notification calls will not be made to that number. The administrator must remove the number for the individual subscriber.

Cisco Unity Express provides a default restriction table that defines two requirements:

- Minimum and maximum number of digits, including access codes, allowed in a phone number. The minimum is 1 digit and the maximum is 30 digits. The default is 1 digit.
- A maximum of 10 dial strings that represent the restricted numbers. Each string consists of a call pattern and a setting that specifies if a phone number matching the pattern is restricted or not.

  Valid patterns can include digits 0 to 9, asterisk (*), and dot (.). The * indicates a match of zero or more digits. Each dot serves as a placeholder for 1 digit.

  Valid setting values are allowed or disallowed.

  When a subscriber tries to set up or change a phone number assigned to a device, the system verifies that the number has the allowed number of digits. If it does not, the subscriber receives a system message.

  If the number of digits is acceptable, the system checks the number against the dial patterns in the restriction table, starting with the first pattern (preference 1). If the number does not match the first pattern, the system checks the next pattern in the table (preference 2), and so forth until a match is found. The system either permits or restricts the call as specified in the dial string.

The default restriction table permits all phone numbers to be used, as shown in Table 12-1.

Table 12-1 Default Restriction Table

Preference	Call Pattern	Allowed
1	*	Yes

You can change only the preference and permission of this pattern.

The restriction table can contain identical dial strings, which have the same call pattern and permission setting. This includes the default pattern. You can delete any of these dial strings if the table contains *at least one* default pattern.

Table 12-2 illustrates a restriction table with international numbers and restricted numbers.

Table 12-2 Restriction Table with International Numbers

Preference	Call Pattern	Allowed
1	9011*	No
2	91..........	No
3	*	Yes

Table 12-3 illustrates a restriction table that permits one number in an area code but restricts all other numbers in that area code.

Table 12-3 Restriction Table with Restricted Area Code

Preference	Call Pattern	Allowed
1	9011*	No
2	912225550150	Yes
3	91222.......	No
4	*	Yes

- SMTP server setup—Sending notifications to a subscriber's e-mail or text messages to text pagers requires an SMTP server. The administrator must configure an external SMTP server address for Cisco Unity Express to use to send the text notifications. The SMTP server address can be the hostname or IP address. To use the hostname, verify that the DNS server is configured.

  If the SMTP server requires a user ID and password for authentication, the administrator must configure the user ID and password on Cisco Unity Express software.
- From address for outgoing e-mails—E-mail messages and notifications sent out by Cisco Unity Express display the address *hostname@domain* in the From field, where *hostname* is the hostname configured for Cisco Unity Express and *domain* is the domain name configured for Cisco Unity Express. The administrator can configure a more descriptive e-mail address to use in this field. Maximum length is 128 characters.

Subscriber and Device-Specific Settings

Subscribers are able to use the telephone user interface (TUI), graphical user interface (GUI), or VoiceView Express to specify the phone devices and numeric pagers to which message notifications will be sent. Subscribers can use only the GUI or VoiceView Express to configure e-mail inboxes or text pagers to receive notifications.

The administrator can use the GUI, VoiceView Express, or the CLI procedures in this section to configure any supported device to receive notifications.

The following settings are available for configuring message notification:

- Phone number—The system dials this number when a mailbox receives a new message. The number consists only of digits 0 to 9; no other characters or pauses are permitted. Include any access codes as part of the phone number.

  This setting is not available for e-mail inboxes and text pagers.

  If the phone number is removed, the system disables the device.

  The administrator configures a restriction table that controls what phone numbers are allowed for message notification. See "System-Wide Message Notification Settings" on page 2 for information on restriction tables.
- Extra digits—The system dials these digits after the phone number when the outgoing call is answered. The system treats these digits as DTMF digits from Cisco Unity Express to the called device.

  The result of these digits depends on the called device. For example, the digits appear on the display of a numeric pager.

Extra digits can consist of digits 0 to 9, pound or hash (#), asterisk (*), and plus (+). The plus sign is used to insert a 1-second pause. The maximum number of extra digits is 64.

This setting is not available for e-mail inboxes or text pagers.

- To—This setting is the e-mail address that receives the message notification. The maximum number of characters in the e-mail address is 129.

  This setting is available only to e-mail inboxes and text pagers.

  If the e-mail address is removed, the system disables the device.
- Text—This is the content of the text message, which appears in the body of the e-mail or as a text page on the text pager. The maximum number of characters in the message is 128.
- Attach to e-mail—If this setting is enabled, the system attaches a new voice message as a .wav file to the message notification e-mail. The .wav file format is G711 mu-law 8KHz 8-bit mono.

  This setting is available only to e-mail inboxes.

  The setting is disabled by default so that no voice messages are attached to message notifications.

  The system never attaches a private message to notification e-mails, regardless of this setting.

  The system-wide attachment setting takes precedence over the individual subscriber or group setting. If the administrator disables the e-mail attachment setting system-wide, then subscribers cannot enable the setting on their devices.

  If the administrator changes this system-wide setting from disabled to enabled, the system does not change the preference for those subscribers or groups who were configured on an individual basis.
- Enabling the device—The subscriber or administrator must enable the devices to receive message notifications. Phone devices and numeric pagers require a valid phone number to be enabled. E-mail inboxes and text pagers require a valid e-mail address to be enabled.

  If the administrator changes the system-wide setting to disabled, the subscriber cannot enable any device. The subscriber can enable a device only if the system-wide setting is enabled.
- Notification preference—The subscriber or administrator can set the type of messages for which notifications will be sent: all messages or urgent messages. Urgent is the default.

  The system-wide attachment setting takes precedence over the individual subscriber or group setting. If the administrator changes the system-wide preference from “all” to “urgent,” subscribers cannot enable the setting on their devices.
- Notification schedule—The subscriber or administrator can set a schedule that activates the notification feature for a specific device. Time slots are available 24 hours a day for any day of the week in half-hour increments.

  The default schedule is Monday through Friday, 8:00 am to 5:00 p.m.

  If new messages arrive when the device is inactive, the system does not send a notification for them even if the messages are in a “new” state when the next active time slot occurs.

Options and Settings

Table 12-4 lists the settings and options available for configuring the message notification feature and whether the setting or option defines a condition for the entire system or for individual subscribers or groups. Additionally, the table indicates the interface where the settings or options can be configured.

Table 12-4 Message Notification Settings

Setting or Option	Interface			
System-Wide	**CLI**	**GUI**	**TUI**	**VoiceView**
Enabling notification	x	x		
Notification preference	x	x		
Voice message attachment	x	x		
Connection timeout	x	x		
Mailbox login during outcall	x	x		
Restriction table	x	x		
SMTP server setup	x	x		
From-address	x	x		
User or Group				
Phone number	x	x	x	x
Extra digits	x	x	x	x
To	x	x		x
Text	x	x		x
Voice-mail attachment to e-mail	x	x		x
Enabling the device	x	x	x[1]	x
Notification preference	x	x	x[1]	x
Notification schedule	x	x	x[1]	x

[1] Except for e-mail inboxes and text pagers.

Sending and Receiving Message Notifications

When a subscriber or GDM receives a new voice message, the system checks if message notification is enabled for that mailbox. If notification is disabled, the system does not generate any notifications.

If notification is enabled, the system checks for an enabled device and the notification schedule for that device. If the system finds an enabled device with permission to receive the notification at the time the message is received, the system sends the notification to the device. For a general delivery mailbox (GDM), the system notifies only the devices that are enabled rather than all members of the group.

Handling of the message notification depends on the device type, as described in the following sections:

- Notifications to Phone Devices, page 7
- Notifications to Numeric Pagers, page 8
- Notifications to E-mail Inboxes, page 8
- Notifications to Text Pagers, page 9

Notifications to Phone Devices

To notify a phone device, the Cisco Unity Express system calls the configured phone number.

After the subscriber answers the call, the system sends any configured extra digits. The subscriber is presented with the option to log in to the mailbox using the mailbox ID and PIN (if this option is enabled) or disable notification to the device being called.

If the subscriber does not answer the call after the configured number of seconds, or if the device is busy, the system disconnects the call and does not retry calling the subscriber.

The recipient can turn off message notification for a phone device during the notification. If the recipient does that, the system leaves a message in the recipient's mailbox stating that notification is turned off for that device.

The administrator should be aware of notification loops. For example, subscriber A configures notifications to subscriber B, subscriber B configures notifications to subscriber C, and subscriber C configures notifications to subscriber A. The notifications could fill up the subscribers' mailboxes. In such a case, the administrator should disable notification for one of the subscribers. This will stop the loop. The administrator can reenable notification for that subscriber.

Notifications to Numeric Pagers

To notify a numeric pager, the Cisco Unity Express system calls the configured phone number.

If the pager answers the call, the system sends any configured extra digits and disconnects the call. The extra digits appear on the pager display.

If the device does not answer the call after the configured number of seconds (connection timeout) or is busy, the system disconnects the call and does not retry calling the device.

Notifications to E-mail Inboxes

The system sends an e-mail message to the configured e-mail address for each new message received.

Note If no STMP server is configured, the system does not send e-mail notifications.

The subject of the e-mail message is "Message Notification." The body of the e-mail message contains the message type, extension or user ID, message sender, and the message text configured by the sender. Following is a sample e-mail message:

```
Message Type: Urgent
Message for: userA
Message from: userB
Meeting scheduled at 2:00 pm today in conference room 3
```

If the option to attach a voice message is enabled, the system attaches the message as a .wav file. The .wav file format is G711 mu-law 8KHz 8-bit mono. The filename has the format **VM_***yyyy***.***mm.dd_hh***.***mm***.***ss***.wav**, where *yyyy* is the year, *dd* is the day, *hh* is the hour in 24-hour format, *mm* is the minutes, and *ss* is the seconds.

If the system cannot deliver the e-mail, the system does not generate a message delivery failure notification.

Notifications to Text Pagers

The system sends an e-mail message to the configured e-mail address and creates one text page for each new message received.

Note If no STMP server is configured, the system does not send text pager notifications.

The subject of the e-mail message is "Message Notification." The body of the e-mail message contains the message type, extension or user ID, message sender, and the message text configured by the message recipient during notification setup. This text will be the same for all messages received by this subscriber.

Following is a sample e-mail message:

```
Message Type: Urgent
Message for: userA
Message from: userB
New voicemail for number 1122
```

If the system cannot deliver the e-mail, the system does not generate a message delivery failure notification.

Configuring System-Wide Settings

Follow this procedure to set the system-wide message notification settings.

Prerequisites

Before configuring the message notification feature, you must first configure:

- SMTP server hostname
- SMTP authentication values (user ID and password or credential string)
- Restriction table

Cisco Unity Express 8.0 or a later version is required to append a text message preceding a notification or to append a signature message following a notification.

To configure the SMTP parameters, see "Configuring SMTP Parameters" on page 60.To configure the restriction table parameters, see "Configuring Restriction Tables" on page 32.

Required Data for This Procedure

- User IDs or group names if a subset of subscribers or groups will have access to message notification
- Notification preference
- Number of seconds for the connection timeout
- If you want to add phone numbers to the restriction table:
  - Minimum and maximum number of digits in a dial-string
  - At least one dial-string pattern

- From-address for outgoing e-mails

SUMMARY STEPS

1. **config t**
2. **voicemail notification enable**

   If an SMTP server is not available, a message appears warning the administrator that e-mail and text pager notifications will not work.
3. (Optional) **voicemail notification preference** {**all** | **urgent**}
4. (Optional) **voicemail notification email attach**
5. (Optional) v**oicemail notification connect-timeout** *seconds*
6. (Optional) **voicemail notification allow-login**
7. (Optional) **voicemail notification text prefix** {**append "***text message***" | delimiting character**}
8. (Optional) **voicemail notification text suffix** {**append "***text message***" | delimiting character**}
9. **voicemail configuration outgoing-email from-address** *email-address*
10. **end**
11. **show voicemail notification**
12. **show voicemail notification restriction-table**
13. **show smtp server**
14. **show voicemail configuration**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`voicemail notification enable`**
	Example:
	`se-10-0-0-0(config)# voicemail notification enable`
		Enables voice message notification on a system-wide basis. This command must be executed before enabling the feature for any subscribers or groups.

Step 3	**`voicemail notification preference`** {**`all`** | **`urgent`**}
	Example:
	`se-10-0-0-0(config)# voicemail notification preference all`
	`se-10-0-0-0(config)# voicemail notification preference urgent`
		(Optional) Specifies the type of messages that generate notifications.
		• **all**—All messages generate notifications.
		• **urgent**—Only urgent messages generate notifications. The system-wide default is **urgent**.

Step 4	**`voicemail notification email attach`**
	Example:
	`se-10-0-0-0(config)# voicemail notification email attach`
		(Optional) Enables subscribers to attach voice messages to outgoing notification e-mails. The system-wide default is disabled.

	Command or Action	Purpose
Step 5	v**oicemail notification connect-timeout** *seconds* **Example:** `se-10-0-0-0(config)# voicemail notification connect-timeout 60`	(Optional) Specifies the number of seconds after which an outgoing message notification call is disconnected and considered a failed call. Valid values are 12 to 96. The default is 48. This value applies only to phone devices and numeric pagers.
Step 6	**voicemail notification allow-login** **Example:** `se-10-0-0-0(config)# voicemail notification allow-login`	(Optional) Enables a subscriber to log in to voice mail during an outgoing notification call. The default is disabled. If enabled, the system provides the subscriber with an option to log into voice mail to retrieve the message.
Step 7	**voicemail notification text prefix** {**append “***text message***”** | **delimiting character**} **Example:** `se-10-0-0-0(config)# voicemail notification text prefix append “You have a new voicemail.”`	(Optional, Cisco Unity Express 8.0 and later versions only) Appends a text message preceding a voicemail notification on a system-wide basis.
Step 8	**voicemail notification text suffix** {**append “***text message***”** | **delimiting character**} **Example:** `se-10-0-0-0(config)# voicemail notification text suffix append “VoiceMail Administration.”`	(Optional, Cisco Unity Express 8.0 and later versions only) Appends signature text following the notification text on a system-wide basis.
Step 9	**voicemail configuration outgoing-email from-address** *email-address* **Example:** `se-10-0-0-0(config)# voicemail configuration outgoing-email from-address companyname@mycompany.com`	Configures an address to use in the From field of outgoing Cisco Unity Express e-mail messages. • *email-address*—Name and domain name. Maximum length is 128 characters
Step 10	**end**	Exits configuration mode.
Step 11	**show voicemail notification** **Example:** `se-10-0-0-0# show voicemail notification`	Displays the configured message notification settings.
Step 12	**show voicemail notification restriction-table** **Example:** `se-10-0-0-0# show voicemail notification restriction-table`	Displays the configured restriction table.

	Command or Action	Purpose
Step 13	**show smtp server** **Example:** `se-10-0-0-0# show smtp server`	Displays the SMTP server settings.
Step 14	**show voicemail configuration** **Example:** `se-10-0-0-0# show voicemail configuration`	Displays the From address for outgoing e-mail messages.

Examples

The following is sample output for the **show voicemail notification** command.

```
se-10-0-0-0# show voicemail notification

Message Notification:          enabled
Notification Preference:       all
Connection Timeout:            60 seconds
Login to VoiceMail allowed:    no
Attach voice message:          yes
```

The following is sample output for the **show voicemail notification restriction-table** command.

```
se-10-0-0-0# show voicemail notification restriction-table

Restriction table:           msg-notification
Minimum digits allowed:      5
Maximum digits allowed:      18
Dial-Strings:
     Preference      Call Pattern     Allowed
      1             91222*            Yes
      2             *                 No
```

The following is sample output for the **show smtp server** command.

```
se-10-0-0-0# show smtp server

SMTP Server: 172.16.1.1
Authentication: Required
Username: smtp123
```

The following is sample output for the **show voicemail configuration** command:

```
se-10-0-0-0# show voicemail configuration

Outgoing Email From-Address:      companyname@mycompany.com
```

Enabling Message Notification for a Subscriber or Group

Before configuring message notification on a device for a subscriber or group, enable the message notification capability for the subscriber or group.

Starting in Cisco Unity Express configuration mode, use the following command to enable message notification:

voicemail notification owner *owner-id* **enable**

where *owner-id* is the username of the subscriber or groupname of the group that requires the message notification capability.

```
The following example enables message notification for the subscriber user5 and the group
sales:

se-10-0-0-0# config t
se-10-0-0-0(config)# voicemail notification owner user5 enable
se-10-0-0-0(config)# voicemail notification owner sales enable
se-10-0-0-0(config)# end
se-10-0-0-0#
```

Now configure message notification on one or more devices for the subscriber or group.

Configuring Message Notification for Devices

The following procedures configure the devices for message notification:

- Configuring Message Notification for Phone Devices, page 13
- Configuring Message Notification for a Numeric Pager, page 17
- Configuring Message Notification for E-mail, page 21
- Configuring Message Notification for a Text Pager, page 26

Configuring Message Notification for Phone Devices

Use this procedure to configure message notification for a subscriber or group phone device.

Prerequisites

Enable the message notification capability for the subscriber or group. See "Enabling Message Notification for a Subscriber or Group" on page 12.

Required Data for This Procedure

- Phone number
- Extra digits, if any
- Notification preference
- Days and times when notification is active

SUMMARY STEPS

1. **username** *username* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **phonenumber** *phonenumber*

   or

   groupname *groupname* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **phonenumber** *phonenumber*

2. (Optional) **username** *username* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **extra-digits** *digits*

   or

   (Optional) **groupname** *groupname* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **extra-digits** *digits*

3. **username** *username* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **enable**

   or

   groupname *groupname* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **enable**

4. **username** *username* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **preference** {**all** | **urgent**}

   or

   groupname *groupname* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **preference** {**all** | **urgent**}

5. **username** *username* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*

   or

   groupname *groupname* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*

6. **show voicemail notification owner** *owner-id* **profile**

7. **show voicemail notification owner** *owner-id* {**cell-phone** | **home-phone** | **work-phone**}

DETAILED STEPS

	Command or Action	Purpose

Step 1	**username** *username* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **phonenumber** *phonenumber*
	or
	groupname *groupname* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **phonenumber** *phonenumber*
	
	Example:
	`se-10-0-0-0# username user3 profile vm-notif-profile cell-phone phonenumber 912225550150`
	`se-10-0-0-0# username user4 profile vm-notif-profile home-phone phonenumber 912225550160`
	`se-10-0-0-0# groupname sales profile vm-notif-profile work-phone phonenumber 912225550165`
		Specifies the phone number that the system dials when sending a message notification to the phone device.
		• *username*—User ID
		• *groupname*—Group ID
		• *phonenumber*—Phone number of the device. Include any access codes in the phone number. Valid characters are digits 0 to 9.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Phone number is restricted.

Step 2	**username** *username* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **extra-digits** *digits*
	or
	groupname *grouprname* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **extra-digits** *digits*
	
	Example:
	`se-10-0-0-0# username user3 profile vm-notif-profile cell-phone extra-digits 1234`
	`se-10-0-0-0# groupname sales profile vm-notif-profile work-phone extra-digits 7675`
		(Optional) Enter any extra digits that should be dialed after the outgoing call is answered.
		Valid values include digits 0 to 9, pound or hash (#), asterisk (*), or plus (+). The plus sign adds a 1-second pause in the number. The maximum number of digits allowed is 64.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Extra digits contain more than 64 digits.
		• Extra digits contain an unacceptable character.

Step 3	**username** *username* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **enable**
	or
	groupname *grouprname* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **enable**
	
	Example:
	`se-10-0-0-0# username user3 profile vm-notif-profile cell-phone enable`
	`se-10-0-0-0# username user4 profile vm-notif-profile home-phone enable`
	`se-10-0-0-0# groupname sales profile vm-notif-profile work-phone enable`
		Enables the device to receive message notifications.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Phone device does not have an assigned phone number.
		• Message notification is disabled system-wide.

	Command or Action	Purpose

Step 4	**username** *username* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **preference** {**all** | **urgent**}
	or
	groupname *groupname* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **preference** {**all** | **urgent**}
	Example:
	`se-10-0-0-0# username user3 profile vm-notif-profile cell-phone all`
	`se-10-0-0-0# username user4 profile vm-notif-profile home-phone preference urgent`
	`se-10-0-0-0# groupname sales profile vm-notif-profile work-phone preference all`
		Specifies the type of messages that generate notifications.
		• **all**—All messages generate notifications.
		• **urgent**—Only urgent messages generate notifications. The default is **urgent**.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• System-wide preference is set to urgent and this command tries to set the preference to all.

Step 5	**username** *username* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*
	or
	groupname *groupname* **profile vm-notif-profile** {**cell-phone** | **home-phone** | **work-phone**} **schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*
	Example:
	`se-10-0-0-0# username user3 profile vm-notif-profile cell-phone schedule day 2 active from 08:00 to 11:30`
	`se-10-0-0-0# username user3 profile vm-notif-profile cell-phone schedule day 2 active from 13:00 to 17:30`
	`se-10-0-0-0# username user3 profile vm-notif-profile cell-phone schedule day 3 active from 08:00 to 15:00`
	`se-10-0-0-0# username user3 profile vm-notif-profile cell-phone schedule day 6 active from 09:00 to 13:30`
	`se-10-0-0-0# username user4 profile vm-notif-profile home-phone schedule day 2 active from 08:00 to 12:00`
	`se-10-0-0-0# groupname sales profile vm-notif-profile work-phone schedule day 3 active from 08:00 to 18:00`
	`se-10-0-0-0# groupname sales profile vm-notif-profile work-phone schedule day 5 active from 08:00 to 20:00`
		Specifies the days and times when message notification is active for this device. This operation changes only the specified time slots; the other time slots are not changed.
		• *day-of-week*—Valid values are 1 to 7, where 1 is Sunday, 2 is Monday, and so forth.
		• *hh*—Valid values are 00 to 24. Use the 24-hour clock for start and end times.
		• *mm*—Valid values are 00 or 30.
		Repeat this step for each day of the week and time block that message notification is active.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Start time is later than end time.

Step 6	**show voicemail notification owner** *owner-id* **profile** **Example:** `se-10-0-0-0# show voicemail notification owner user3 profile`	Displays the status of message notification for the subscriber or group.
Step 7	**show voicemail notification owner** *owner-id* {**cell-phone** | **home-phone** | **work-phone**} **Example:** `se-10-0-0-0# show notification owner user3 cell-phone`	Displays the settings for the subscriber or group device.

Examples

The following is sample output for the **show voicemail notification owner** command.

```
se-10-0-0-0# show voicemail notification owner user3 profile

Message notification:     enabled
Profile:                  vm-notif-profile
```

The following is sample output for the **show voicemail notification owner cell-phone** command.

```
se-10-0-0-0# show voicemail notification owner user3 cell-phone

Profile:        vm-notif-profile
Device:         cell-phone
Enabled:        yes
Preference:     all
Phone/Email:    912225550150
Extra Digits:   1234
Schedule (active hours):
    Sunday       Inactive all day
    Monday       08:00 to 11:30, 13:00 to 17:30
    Tuesday      08:00 to 15:00
    Wednesday    Inactive all day
    Thursday     Inactive all day
    Friday       09:00 to 13:30
    Saturday     Inactive all day
```

Configuring Message Notification for a Numeric Pager

Use this procedure to configure message notification for a subscriber or group numeric pager.

Prerequisites

Enable the message notification capability for the subscriber or group. See "Enabling Message Notification for a Subscriber or Group" on page 12.

Required Data for This Procedure

- Phone number
- Extra digits, if any
- Notification preference
- Days and times when notification is active

SUMMARY STEPS

1. **username** *username* **profile vm-notif-profile num-pager phonenumber** *phonenumber*

   or

   groupname *groupname* **profile vm-notif-profile num-pager phonenumber** *phonenumber*

2. (Optional) **username** *username* **profile vm-notif-profile num-pager extra-digits** *digits*

   or

   (Optional) **groupname** *groupname* **profile vm-notif-profile num-pager extra-digits** *digits*

3. **username** *username* **profile vm-notif-profile num-pager enable**

   or

   groupname *groupname* **profile vm-notif-profile num-pager enable**
4. **username** *username* **profile vm-notif-profile num-pager preference** {**all** | **urgent**}

   or

   groupname *groupname* **profile vm-notif-profile num-pager preference** {**all** | **urgent**}
5. **username** *username* **profile vm-notif-profile num-pager schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*

   or

   groupname *groupname* **profile vm-notif-profile num-pager schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*
6. **show voicemail notification owner** *owner-id* **profile**
7. **show voicemail notification owner** *owner-id* **num-pager**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**username** *username* **profile vm-notif-profile num-pager phonenumber** *phonenumber*
	or
	groupname *groupname* **profile vm-notif-profile num-pager phonenumber** *phonenumber*
	Example:
	`se-10-0-0-0# username user5 profile vm-notif-profile num-pager phonenumber 912225550150`
	`se-10-0-0-0# groupname techs profile vm-notif-profile num-pager phonenumber 912225550180`
		Specifies the phone number that the system dials when sending a message notification to the numeric pager.
		• *username*—User ID
		• *groupname*—Group ID
		• *phonenumber*—Phone number of the device. Include any access codes in the phone number. Valid characters are digits 0 to 9.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Phone number is restricted.

Step 2	**username** *username* **profile vm-notif-profile num-pager extra-digits** *digits*
	or
	groupname *groupname* **profile vm-notif-profile num-pager extra-digits** *digits*
	Example:
	`se-10-0-0-0# username user5 profile vm-notif-profile num-pager extra-digits 1234`
	`se-10-0-0-0# groupname techs profile vm-notif-profile num-pager extra-digits 8282`
		(Optional) Enter any extra digits that should be dialed after the outgoing call is answered.
		Valid values include digits 0 to 9, pound or hash (#), asterisk (*), or plus (+). The plus sign adds a 1-second pause in the number. The maximum number of digits allowed is 64.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Extra digits contain more than 64 digits.
		• Extra digits contain an unacceptable character.

Step 3	**username** *username* **profile vm-notif-profile num-pager enable**
	or
	groupname *groupname* **profile vm-notif-profile num-pager enable**
	Example:
	`se-10-0-0-0# username user5 profile vm-notif-profile num-pager enable`
	`se-10-0-0-0# groupname techs profile vm-notif-profile num-pager enable`
		Enables the device to receive message notifications.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Numeric pager does not have an assigned phone number.
		• Message notification is disabled system-wide.

	Command or Action	Purpose

Step 4	**`username`** *`username`* **`profile vm-notif-profile num-pager preference`** {**`all`** | **`urgent`**}
	or
	`groupname` *`groupname`* **`profile vm-notif-profile num-pager preference`** {**`all`** | **`urgent`**}
	
	Example:
	`se-10-0-0-0# username user5 profile vm-notif-profile num-pager all`
	`se-10-0-0-0# groupname techs profile vm-notif-profile num-pager urgent`
		Specifies the type of messages that generate notifications.
		• **all**—All messages generate notifications.
		• **urgent**—Only urgent messages generate notifications. The default is **urgent**.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• System-wide preference is set to urgent and this command tries to set the preference to all.

Step 5	**`username`** *`username`* **`profile vm-notif-profile num-pager schedule day`** *`day-of-week`* **`active from`** *`hh`***`:`***`mm`* **`to`** *`hh`***`:`***`mm`*
	or
	`groupname` *`groupname`* **`profile vm-notif-profile num-pager schedule day`** *`day-of-week`* **`active from`** *`hh`***`:`***`mm`* **`to`** *`hh`***`:`***`mm`*
	
	Example:
	`se-10-0-0-0# username user5 profile vm-notif-profile num-pager schedule day 2 active from 08:00 to 11:30`
	`se-10-0-0-0# username user5 profile vm-notif-profile num-pager schedule day 2 active from 13:00 to 17:30`
	`se-10-0-0-0# username user5 profile vm-notif-profile num-pager schedule day 3 active from 08:00 to 15:00`
	`se-10-0-0-0# username user5 profile vm-notif-profile num-pager schedule day 6 active from 09:00 to 13:30`
	`se-10-0-0-0# groupname techs profile vm-notif-profile num-pager schedule day 2 active from 08:00 to 17:00`
	`se-10-0-0-0# groupname techs profile vm-notif-profile num-pager schedule day 4 active from 08:00 to 12:00`
	`se-10-0-0-0# groupname techs profile vm-notif-profile num-pager schedule day 4 active from 13:30 to 20:00`
	`se-10-0-0-0# groupname techs profile vm-notif-profile num-pager schedule day 6 active from 08:00 to 15:00`
		Specifies the days and times when message notification is active for this device. This operation changes only the specified time slots; the other time slots are not changed.
		• *day-of-week*—Valid values are 1 to 7, where 1 is Sunday, 2 is Monday, and so forth.
		• *hh*—Valid values are 00 to 24. Use the 24-hour clock for start and end times.
		• *mm*—Valid values are 00 or 30.
		Repeat this step for each day of the week and time block that message notification is active.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Start time is later than end time.

Step 6	**`show voicemail notification owner`** *`owner-id`* **`profile`**
	
	Example:
	`se-10-0-0-0# show voicemail notification owner user5 profile`
		Displays the status of message notification for the subscriber or group.

Step 7	**`show voicemail notification owner`** *`owner-id`* **`num-pager`**
	
	Example:
	`se-10-0-0-0# show notification owner techs num-pager`
		Displays the settings for the subscriber or group device.

Examples

The following is sample output for the **show voicemail notification owner** command.

```
se-10-0-0-0# show voicemail notification owner user5 profile

Message notification:     enabled
Profile:                  vm-notif-profile
```

The following is sample output for the **show voicemail notification owner num-pager** command.

```
se-10-0-0-0# show voicemail notification owner techs num-pager

Profile:        vm-notif-profile
Device:         num-pager
Enabled:        yes
Preference:     urgent
Phone/Email:    912225550180
Extra Digits:   8282
Schedule (active hours):
    Sunday       Inactive all day
    Monday       08:00 to 17:00
    Tuesday      Inactive all day
    Wednesday    08:00 to 12:00, 13:30 to 20:00
    Thursday     Inactive all day
    Friday       08:00 to 15:00
    Saturday     Inactive all day
```

Configuring Message Notification for E-mail

Use this procedure to configure message notification for a subscriber or group e-mail inbox.

Prerequisites

Enable the message notification capability for the subscriber or group. See "Enabling Message Notification for a Subscriber or Group" on page 12.

Required Data for This Procedure

- E-mail address
- Status of attaching voice messages to e-mail notifications
- Message text
- Notification preference
- Days and times when notification is active

SUMMARY STEPS

1. **username** *username* **profile vm-notif-profile email address** *email-address*

   or

   groupname *groupname* **profile vm-notif-profile email address** *email-address*

2. **username** *username* **profile vm-notif-profile email enable**

   or

groupname *groupname* **profile vm-notif-profile email enable**

3. (Optional) **username** *username* **profile vm-notif-profile email attach**

   or

   (Optional) **groupname** *groupname* **profile vm-notif-profile email attach**

4. **username** *username* **profile vm-notif-profile email preference** {**all** | **urgent**}

   or

   groupname *groupname* **profile vm-notif-profile email preference** {**all** | **urgent**}

5. **username** *username* **profile vm-notif-profile email schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*

   or

   groupname *groupname* **profile vm-notif-profile email schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*

6. **username** *username* **profile vm-notif-profile email text** *email-text*

   or

   groupname *grouprname* **profile vm-notif-profile email text** *email-text*

7. **show voicemail notification owner** *owner-id* **profile**

8. **show voicemail notification owner** *owner-id* **email**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**username** *username* **profile vm-notif-profile email address** *email-address*
	or
	groupname *groupname* **profile vm-notif-profile email address** *email-address*
	Example:
	`se-10-0-0-0# username user6 profile vm-notif-profile email address user6@company.com`
	`se-10-0-0-0# groupname mgrs profile vm-notif-profile email address mgrs@company.com`
		Configures the subscriber or group e-mail address for receiving message notifications.
		• *username*—User ID
		• *groupname*—Group ID
		• *email-address*—E-mail address for the user. The maximum number of alphanumeric characters in the e-mail address is 129.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• E-mail address exceeds 129 characters.

Step 2	**username** *username* **profile vm-notif-profile email enable**
	or
	groupname *groupname* **profile vm-notif-profile email enable**
	Example:
	`se-10-0-0-0# username user6 profile vm-notif-profile email enable`
	`se-10-0-0-0# groupname mgrs profile vm-notif-profile email enable`
		Enables the device to receive message notifications.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Message notification is disabled system-wide.
		• SMTP server is not configured.

Step 3	**username** *username* **profile vm-notif-profile email attach**
	or
	groupname *groupname* **profile vm-notif-profile email attach**
	Example:
	`se-10-0-0-0# username user6 profile vm-notif-profile email attach`
	`se-10-0-0-0# groupname mgrs profile vm-notif-profile email attach`
		Enables voice messages to be attached to outgoing e-mail notifications.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• E-mail attachment is disabled system-wide and this command tries to enable it.

	Command or Action	Purpose

Step 4	**username** *username* **profile vm-notif-profile email text** *email-text*
	or
	groupname *groupname* **profile vm-notif-profile email text** *email-text*
	Example:
	`se-10-0-0-0# username user6 profile vm-notif-profile email text “Sales meeting scheduled for 05/26/06 2:00 pm main office room A”`
	`se-10-0-0-0# groupname mgrs profile vm-notif-profile email text “1Q06 reports due Friday by noon”`
		Configures the text that is appended to the outgoing e-mail message.
		email-text can contain all alphanumeric characters except question mark (?). The maximum number of characters in the message is 128. Enclose the message in double quotes (“ ”).
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Text message is greater than 128 characters.

Step 5	**username** *username* **profile vm-notif-profile email preference** {**all** | **urgent**}
	or
	groupname *grouprname* **profile vm-notif-profile email preference** {**all** | **urgent**}
	Example:
	`se-10-0-0-0# username user6 profile vm-notif-profile email preference urgent`
	`se-10-0-0-0# groupname mgrs profile vm-notify-profile email preference all`
		Specifies the type of messages that generate notifications.
		• **all**—All messages generate notifications.
		• **urgent**—Only urgent messages generate notifications. The default is **urgent**.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• System-wide preference is set to urgent and this command tries to set the preference to all.

	Command or Action	Purpose

Step 6	**username** *username* **profile vm-notif-profile email schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*
	or
	groupname *groupname* **profile vm-notif-profile email schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*
	Example:
	`se-10-0-0-0# username user6 profile vm-notif-profile email schedule day 2 active from 08:00 to 11:30`
	`se-10-0-0-0# username user6 profile vm-notif-profile email schedule day 2 active from 13:00 to 17:30`
	`se-10-0-0-0# username user6 profile vm-notif-profile email schedule day 3 active from 08:00 to 15:00`
	`se-10-0-0-0# username user6 profile vm-notif-profile email schedule day 6 active from 09:00 to 13:30`
	`se-10-0-0-0# groupname mgrs profile vm-notif-profile email schedule day 2 active from 08:30 to 18:00`
	`se-10-0-0-0# groupname mgrs profile vm-notif-profile email schedule day 3 active from 12:00 to 18:00`
	`se-10-0-0-0# groupname mgrs profile vm-notif-profile email schedule day 4 active from 09:00 to 15:00`
	`se-10-0-0-0# groupname mgrs profile vm-notif-profile email schedule day 5 active from 07:00 to 17:00`
		Specifies the days and times when message notification is active for this device. This operation changes only the specified time slots; the other time slots are not changed.
		• *day-of-week*—Valid values are 1 to 7, where 1 is Sunday, 2 is Monday, and so forth.
		• *hh*—Valid values are 00 to 24. Use the 24-hour clock for start and end times.
		• *mm*—Valid values are 00 or 30.
		Repeat this step for each day of the week and time block that message notification is active.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Start time is later than end time.

Step 7	**show voicemail notification owner** *owner-id* **profile** **Example:** `se-10-0-0-0# show voicemail notification owner user6 profile`	Displays the status of message notification for the subscriber or group.
Step 8	**show voicemail notification owner** *owner-id* **email** **Example:** `se-10-0-0-0# show notification owner mgrs email`	Displays the settings for the subscriber or group device.

Examples

The following is sample output for the **show voicemail notification owner** command.

```
se-10-0-0-0# show voicemail notification owner mgrs profile

Message notification:     enabled
Profile:                  vm-notif-profile
```

The following is sample output for the **show voicemail notification owner email** command.

```
se-10-0-0-0# show voicemail notification owner user6 email

Profile:        vm-notif-profile
Device:         email
Enabled:        yes
Preference:     all
Email:          mgrs@company.com
Attach VM:      yes
Schedule (active hours):
    Sunday       Inactive all day
    Monday       08:00 to 11:30, 13:00 to 17:30
```

```
Tuesday      08:00 to 15:00
Wednesday    Inactive all day
Thursday     Inactive all day
Friday       09:00 to 13:30
Saturday     Inactive all day
```

Configuring Message Notification for a Text Pager

Use this procedure to configure message notification for a subscriber or group text pager.

Prerequisites

Enable the message notification capability for the subscriber or group. See "Enabling Message Notification for a Subscriber or Group" on page 12.

Required Data for This Procedure

- E-mail address
- Message text
- Notification preference
- Days and times when notification is active

SUMMARY STEPS

1. **username** *username* **profile vm-notif-profile text-pager address** *email-address*

   or

   groupname *groupname* **profile vm-notif-profile text-pager address** *email-address*
2. **username** *username* **profile vm-notif-profile text-pager enable**

   or

   groupname *groupname* **profile vm-notif-profile text-pager enable**
3. **username** *username* **profile vm-notif-profile text-pager preference** {**all** | **urgent**}

   or

   groupname *groupname* **profile vm-notif-profile text-pager preference** {**all** | **urgent**}
4. **username** *username* **profile vm-notif-profile text-pager schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*

   or

   groupname *groupname* **profile vm-notif-profile text-pager schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*
5. **username** *username* **profile vm-notif-profile text-pager text** *email-text*

   or

   groupname *groupname* **profile vm-notif-profile text-pager text** *email-text*
6. **show voicemail notification owner** *owner-id* **profile**
7. **show voicemail notification owner** *owner-id* **text-pager**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**username** *username* **profile vm-notif-profile text-pager address** *email-address*
	or
	groupname *groupname* **profile vm-notif-profile text-pager address** *email-address*
	Example:
	`se-10-0-0-0# username user7 profile vm-notif-profile text-pager address user3@company.com`
	`se-10-0-0-0# groupname pubrel profile vm-notif-profile text-pager address pubrel@mycompany.com`
		Configures the subscriber e-mail address for receiving message notifications.
		• *username*—User ID
		• *groupname*—Group ID
		• *email-address*—E-mail address for the subscriber. The maximum number of alphanumeric characters in the e-mail address is 129.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• E-mail address exceeds 129 characters.

Step 2	**username** *username* **profile vm-notif-profile text-pager enable**
	or
	groupname *groupname* **profile vm-notif-profile text-pager enable**
	Example:
	`se-10-0-0-0# username user7 profile vm-notif-profile text-pager enable`
	`se-10-0-0-0# groupname pubrel profile vm-notif-profile text-pager enable`
		Enables the device to receive message notifications.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Message notification is disabled system-wide.
		• SMTP server is not configured.

Step 3	**username** *username* **profile vm-notif-profile text-pager text** *email-text*
	or
	groupname *groupname* **profile vm-notif-profile text-pager text** *email-text*
	Example:
	`se-10-0-0-0# username user7 profile vm-notif-profile text-pager text “Sales meeting scheduled for 05/26/06 2:00 pm main office room A”`
	`se-10-0-0-0# groupname pubrel profile vm-notif-profile text-pager text “Account collaterals due tomorrow by 9 am”`
		Configures the text that is appended to the outgoing text pager message.
		email-text can contain all alphanumeric characters except question mark (?). The maximum number of characters in the message is 128. Enclose the message in double quotes (“ ”).
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Text message is greater than 128 characters.

	Command or Action	Purpose

Step 4	**username** *username* **profile vm-notif-profile text-pager preference** {**all** | **urgent**}
	or
	groupname *groupname* **profile vm-notif-profile text-pager preference** {**all** | **urgent**}
	Example:
	`se-10-0-0-0# username user7 profile vm-notif-profile text-pager preference urgent`
	`se-10-0-0-0# groupname pubrel profile vm-notif-profile text-pager preference all`
		Specifies the type of messages that generate notifications.
		• **all**—All messages generate notifications.
		• **urgent**—Only urgent messages generate notifications. The default is **urgent**.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• System-wide preference is set to urgent and this command tries to set the preference to all.

Step 5	**username** *username* **profile vm-notif-profile text-pager schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*
	or
	groupname *groupname* **profile vm-notif-profile text-pager schedule day** *day-of-week* **active from** *hh***:***mm* **to** *hh***:***mm*
	Example:
	`se-10-0-0-0# username user7 profile vm-notif-profile text-pager schedule day 2 active from 08:00 to 11:30`
	`se-10-0-0-0# username user7 profile vm-notif-profile text-pager schedule day 2 active from 13:00 to 17:30`
	`se-10-0-0-0# username user7 profile vm-notif-profile text-pager schedule day 3 active from 08:00 to 15:00`
	`se-10-0-0-0# username user7 profile vm-notif-profile text-pager schedule day 6 active from 09:00 to 13:30`
	`se-10-0-0-0# groupname pubrel profile vm-notif-profile text-pager schedule day 2 active 08:30 to 12:00`
	`se-10-0-0-0# groupname pubrel profile vm-notif-profile text-pager schedule day 3 active 09:00 to 17:00`
	`se-10-0-0-0# groupname pubrel profile vm-notif-profile text-pager schedule day 5 active 13:00 to 18:00`
		Specifies the days and times when message notification is active for this device. This operation changes only the specified time slots; the other time slots are not changed.
		• *day-of-week*—Valid values are 1 to 7, where 1 is Sunday, 2 is Monday, and so forth.
		• *hh*—Valid values are 00 to 24. Use the 24-hour clock for start and end times.
		• *mm*—Valid values are 00 or 30.
		Repeat this step for each day of the week and time block that message notification is active.
		System messages occur for the following conditions:
		• Username or groupname does not exist.
		• User or group does not have a mailbox.
		• Profile does not exist.
		• Start time is later than end time.

Step 6	**show voicemail notification owner** *owner-id* **profile** **Example:** `se-10-0-0-0# show voicemail notification owner user7 profile`	Displays the status of message notification for the subscriber or group.
Step 7	**show voicemail notification owner** *owner-id* **text-pager** **Example:** `se-10-0-0-0# show notification owner pubrel text-pager`	Displays the settings for the subscriber or group device.

Examples

The following is sample output for the **show voicemail notification owner** command.

```
se-10-0-0-0# show voicemail notification owner user7 profile
Message notification:     enabled
Profile:                  vm-notif-profile
```

The following is sample output for the **show voicemail notification owner text-pager** command.

```
se-10-0-0-0# show voicemail notification owner pubrel text-pager

Profile:        vm-notif-profile
Device:         text-pager
Enabled:        yes
Preference:     all
Email:          pubrel@company.com
Schedule (active hours):
    Sunday       Inactive all day
    Monday       08:30 to 12:00
    Tuesday      09:00 to 17:00
    Wednesday    Inactive all day
    Thursday     Inactive all day
    Friday       13:00 to 18:00
    Saturday     Inactive all day
```

Cascading Message Notification

This section discusses the following topics:

- Overview, page 29
- Configuring Cascading Message Notification, page 31

Overview

Starting in release 3.0, the existing message notification feature that was introduced in 2.3(1) was extended to enable you to:

- Set up a series of cascading notifications to a widening circle of recipients
- Enable subscribers to define time-based rules that determine how the notification is cascaded to other local subscribers in the system

For example, User-A can set up the following cascading rules:

- If a new message in the mailbox is not listened to for 15 minutes after the arrival, a notification is sent to User-B.
- If a new message is not listened to for 30 minutes after arrival, a notification is sent to User-C.

In this scenario, if a message is sent to the User-A, on Monday at 1:00 pm and User-A has not listened to this message by 1:15 pm, a notification is sent to User B. Cisco Unity Express determines which of User B’s devices are active to receive notification at 1:15 pm on Monday and a notification call is made to all of User-B’s active devices. The subscriber hears a voice prompt when the notification is cascaded from User-A to User-B. If User-A has still not listened to this message by 1:30 pm, a notification is sent to all of User-C’s active devices.

When a notification is cascaded to a target, the user listening to the cascaded notification is given the option to disable the cascading from that mailbox, or the option to disable the notification feature in its own profile. If in the above example, User B chooses to disable cascading from User-A's mailbox, all messages are left in User-A's mailbox for which cascading to User-B has been disabled remotely.

If User-B chooses to disable notification to User-B's own device, User-B's notification profile is changed and notification to that particular device is disabled. A message is left in User-B's mailbox that notification to the device was disabled remotely.

Configurable Options

System Configuration

You can enable or disable this feature at the system level only. By default, this feature is disabled. To enable it, you must enable the message notification feature at the system level. When you enable after it was been disabled, cascading is automatically enabled for all users who have their individual cascade settings configured. Disabling the cascade feature does not remove the rules defined by the subscriber for cascading.

User Configuration

Subscribers can setup the cascading rules regardless of whether the cascade feature enabled or disabled. To setup cascading, subscribers must configure a rule with the following items:

- Target Subscriber (UserId or gdmId) — This is a user ID or a GDM ID that is used for cascading notification.
- Time (in minutes) — The time after which the user or GDM is notified if the message is still not heard. This time is calculated from the time that the original message was received. The minimum time allowed is 5 minutes and the maximum time allowed is 10080 minutes (168 hours).

A subscriber can setup a maximum of two such rules. If a subscriber setups more than one rule, the target ID and the time for the two rules must be unique.

Limitations and Conditions

The limitations and conditions of this feature include:

- Notification cascading stops when either:
  - The message is saved or deleted.
  - The last cascade rule has been performed.
- You can use this feature for both personal and general delivery mailboxes.
- Notification can be sent only to local users. Remote users or external users cannot be selected for cascading.
- The schedule of the target subscriber is used for cascading the notifications.
- This feature can be enabled or disabled by either:
  - The system administrator at the system level.

    By default, this feature is disabled. Before you can enable this feature, you must first enable the message notification feature at the system level. The rules defined by the user for cascading are not removed when this feature is disabled at the system level.
  - A user listening to the cascaded notification.

This can be done by either disabling cascaded notifications that they receive from a specified mailbox, or by disabling the notification feature in their profile.

- You can configure a maximum of two notification cascade rules for each subscriber.
- If two notification cascade rules are configured for the same subscriber, the target ID and the time for the two rules must be unique.
- Notification cascading does not occur for private messages and broadcast messages.
- When a notification is cascaded to a target subscriber, all active devices in the target subscriber's profile receive the notification.
- For numeric pagers, the notification is the same as a regular notification.

  You cannot differentiate between a cascaded notification and a regular notification.
- For e-mail and text pager, the cascaded notification format is the same as a regular notification, but you can use the Message For: field to identify a cascaded notification e-mail.

  In a regular notification, this field contains the user's own extension or ID, but in a cascaded notification it contains a different extension or user ID.
- The behavior of cascading notification is based on the target subscriber's message notification profile.

  For example, if:
  - User-A has notification configured to cascade all the urgent messages to User-B.
  - User-B has notification configured for all the messages.

  The message notification cascading is generated for all the messages and not just the urgent messages received in User-A's mailbox.
- This feature is not available in Cisco VoiceView Express.

Configuring Cascading Message Notification

Prerequisites

- Cisco Unity Express 3.0 or a later version
- You must enable this feature at the system level.
- If you want to restrict specified extensions from using this feature, you must configure a restriction table as described in the "Configuring Restriction Tables" section on page 32.

Required Data for This Procedure

This procedure requires the IDs of the users and groups to which you want to cascade the notifications.

SUMMARY STEPS

1. **config t**
2. **voicemail notification cascading enable**
3. **voicemail msg-notification restriction-table** *table-name*
4. **end**

5. **[username | groupname]** [*user-id* | *group-id*] **notification cascade-to** *user-id* **after** *minutes*
6. (Optional) **show voicemail notification**
7. (Optional) **show voicemail notification owner** *owner-id* **profile**
8. (Optional) **show voicemail msg-notification restriction-table**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`voicemail notification cascading enable`**
	Example:
	`se-10-0-0-0(config)# voicemail notification cascading enable`
		Enables the message notification cascading feature at the system level.

Step 3	**`voicemail msg-notification restriction-table`** *`table-name`*
	Example:
	`se-10-0-0-0(config)# voicemail msg-notification restriction-table msg-notifc-r-table`
		Associates a restriction table with the message notification feature:

Step 4	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Step 5	[**`username`** | **`groupname`**] [*`user-id`* | *`group-id`*] **`notification cascade-to`** *`user-id`* **`after`** *`minutes`* **Example:** `se-10-0-0-0# [username	groupname] user2 notification cascade-to user4 after 10`	Defines a rule for cascading the notification. This command takes three inputs • ID of the user/group for whom cascading is to be configured • ID of the user to which to cascade • Time after which to cascade the notification

Step 6	**`show voicemail notification`**
	Example:
	`se-10-0-0-0# show voicemail notification`
		(Optional) Displays the status of the notification cascading feature.

	Command or Action	Purpose
Step 7	**show voicemail notification owner** *owner-id* **profile** **Example:** `se-10-0-0-0# show voicemail notification owner smith profile`	(Optional) Displays the details of the message notification profile for a specific user/group.
Step 8	**show voicemail msg-notification restriction-table** **Example:** `se-10-0-0-0# show voicemail msg-notification restriction-table`	(Optional) Displays the restriction-table associated with the message notification feature.

CHAPTER 13

Networking Cisco Unity Express

This chapter describes the procedures for configuring the networking capability on the local Cisco Unity Express voice-mail system and contains the following sections:

Overview of Cisco Unity Express Networking

Cisco Unity Express supports the Voice Profile for Internet Mail (VPIM) version 2 protocol to permit voice-mail message networking between Cisco Unity Express and Cisco Unity voice-mail systems that are not co-located on the same router or server. The voice-mail systems can reside on Cisco Unified Communications Manager or Cisco Unified Communications Manager Express call control platforms. Supported networked voice-mail configurations include:

- Cisco Unity Express to Cisco Unity Express
- Cisco Unity Express to Cisco Unity
- Cisco Unity to Cisco Unity Express

Cisco Unity Express must be installed and configured at each remote location.

You must configure VPIM networking on Cisco Unity, including the primary location for Cisco Unity and the delivery locations for remote Cisco Unity Express locations.

Types of Remote Addressing

Cisco Unity Express supports the following types of remote addressing:

- Blind addressing

- Spoken name confirmation

Blind Addressing

A subscriber can send a message to another subscriber on a remote location, which must be configured on the local (sender's) system. The sender addresses the message using the location ID of the remote system plus the recipient's extension number at the remote location.

When the message is sent to the remote subscriber, the sender will not hear a confirmation of the recipient's name or extension. This is blind addressing.

Spoken Name Confirmation for Remote Subscribers

Administrators can assign user IDs and extensions in the local Cisco Unity Express directory for subscribers at existing remote locations. Additionally, administrators or other privileged subscribers can record spoken names for these subscribers using the Administration via Telephone (AvT) feature.

If the local system has vCard information enabled, incoming vCard information updates the remote subscriber information on the local system. The vCard information may contain the remote subscriber's first name, last name, and spoken name. This information is stored in the least recently used (LRU) cache.

A sender on the local system can address a message to a remote subscriber using dial-by-name or dial-by-extension. If a spoken name for the recipient is recorded, the sender hears the spoken name as confirmation. If the recipient does not exist in the local directory but is in the LRU cache, the sender hears the LRU cache information as confirmation. If the remote subscriber is not in the directory or the cache, the sender receives the recipient's location ID and extension.

Delivery Notifications

Cisco Unity Express supports the following message delivery notification types:

- Non-delivery receipt (NDR)
- Delayed delivery record (DDR)

Non-Delivery Receipt (NDR)

If the system cannot deliver a message to a remote site after 6 hours, the local sender receives a non-delivery receipt (NDR) indicating the message was not sent or that the message was not delivered to the recipient's mailbox.

This receipt indicates the reason for nondelivery. If nondelivery is due to the recipient's mailbox being full, nonexistent, or disabled, the nondelivery message includes the sender's original message. When the sender plays the NDR, the sender can readdress and resend the original message or delete the message.

Each NDR counts against the sender's mailbox capacity.

Delayed Delivery Record (DDR)

Cisco Unity Express sends a delayed delivery record (DDR) to the local sender's mailbox after 60 minutes of trying to deliver the original message. Unlike the NDR, the DDR does not contain the original message as an attachment and does not count against the sender's mailbox capacity.

The DDR cannot be saved, only deleted.

The system stores only one copy of a DDR for a particular message in the sender's mailbox. The sender must delete the existing DDR in order to receive an updated DDR for the same message.

Configuring Network Locations

Follow this procedure to configure the network locations.

Prerequisites

- Cisco Unity Express must be installed and configured at each remote location.
- Network connectivity between all Cisco Unity Express and Cisco call control system sites must be established.
- Ensure that VPIM networking is configured on Cisco Unity, including the primary location for Cisco Unity and the delivery locations for remote Cisco Unity Express locations.

Required Data for This Procedure

The following information is required to configure networking on Cisco Unity Express:

- Network location ID number—Unique ID number for each location used by the voice-mail sender to send a remote message. The maximum length of the number is 7 digits. Cisco Unity Express supports a maximum of 500 locations.

Note Avoid creating locations with conflicting IDs, such as 100, 1001, and so forth. This may lead to ambiguity while sending messages to these locations and may lead to messages being addressed incorrectly.

- E-mail domain name—E-mail domain name or IP address for the remote voice-mail system. The domain name is attached to the local voice-mail originator's extension when sending a VPIM message. The local system's e-mail domain name must be configured to receive remote voice-mail messages.
- (Optional) Location name—Descriptive name of the network location.
- (Optional) Abbreviated location name—Abbreviated name of the network location. Maximum length of the name is 5 characters.
- (Optional) Voice-mail system telephone number prefix—Phone number prefix that is added to a local voice-mail originator's extension to create a VPIM address. A prefix is required only if an e-mail domain services multiple locations, and extensions between the locations are not unique. The maximum length of the prefix is 15 digits. The default prefix is empty.
- (Optional) Length of the local voice-mail system extensions. The default minimum is 2, the default maximum is 15.
- (Optional) VPIM encoding scheme—Encoding scheme options for translating voice-mail messages at the local Cisco Unity Express system are dynamic, G.711mu-law, or G.726. The default scheme is dynamic.

- (Optional) Voice-mail spoken name capability—Enabling this functionality permits receipt of a voice-mail originator's spoken name, which is played at the beginning of the received voice-mail message.
- (Optional) Broadcast VPIM ID—Used for sending and receiving broadcast messages between network locations. See "Configuring the Broadcast Message VPIM ID for a Network Location" on page 23 for more information.
- (Optional) Secure Messaging—Used for supporting secure messaging. Supported in Cisco Unity Express 8.6 and later versions. See the "Configuring Secure Messaging" section on page 33 for more information.
- Location ID for the local system.

SUMMARY STEPS

1. **config t**
2. **network location id** *number*
3. (Optional) **name** *location-name*
4. (Optional) **abbreviation** *name*
5. **email domain** *domain-name*
6. (Optional) **voicemail phone-prefix** *digit string*
7. (Optional) **voicemail extension-length** *number* [**min** *number* | **max** *number*]
8. (Optional) **voicemail vpim-encoding** {**dynamic** | **G711ulaw** | **G726**}
9. (Optional) **voicemail spoken-name**
10. (Optional) **voicemail secure-messaging**
11. **end**
12. Repeat Steps 2 through 11 for each remote location.
13. **network local location id** *number*
14. **end**
15. **show network locations**
16. **show network detail location id** *number*
17. **show network detail local**
18. **show network queues**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	`network location id` *`number`*
	Example:
	`se-10-0-0-0(config)# network location id 9`
		Enters location configuration mode to allow you to add or modify a location.
		• *number*—A unique numeric ID assigned to the location. This number is used to identify the location and is entered when a subscriber performs addressing functions in the TUI. The maximum length of the number is 7 digits. Cisco Unity Express supports up to 500 locations on a single system.
		• To delete a location, use the **no** form of this command.

Step 3	**`name`** *`location-name`*
	Example:
	`se-10-0-0-0(config-location)# name "San Jose"`
		(Optional) Descriptive name used to identify the location. Enclose the name in double quotes if spaces are used.
		• To delete a location name description, use the **no** form of this command.

Step 4	**`abbreviation`** *`name`*
	Example:
	`se-10-0-0-0(config-location)# abbreviation sjcal`
		(Optional) Creates an alphanumeric abbreviation for the location that is spoken to a subscriber when the subscriber performs addressing functions in the TUI. You cannot enter more than 5 characters.
		• To delete an abbreviation, use the **no** form of this command.

Step 5	**`email domain`** *`domain-name`*
	Example:
	`se-10-0-0-0(config-location)# email domain mycompany.com`
		Configures the e-mail domain name or IP address for the location. The domain name is added when sending a VPIM message to the remote location (for example, "4843000@mycompany.com"). If you do not configure a domain name or IP address, the Cisco Unity Express system at this location cannot receive network messages.
		• To remove the e-mail domain name or IP address and disable networking, use the **no** form of this command.
		Caution If you remove the e-mail domain for a network location, the system automatically disables networking from the Cisco Unity Express module to that location.
		If you remove the e-mail domain for the local location, then networking on that Cisco Unity Express module is disabled.
		To reenable a location, assign it a valid e-mail domain.

	Command or Action	Purpose
Step 6	**voicemail phone-prefix** *digit-string* ***Example:*** se-10-0-0-0(config-location)# voicemail phone-prefix *484*	(Optional) Configures the phone number prefix that is added to an extension to create a VPIM address for a subscriber at the location. A prefix is required only if an e-mail domain services multiple locations and extensions between the locations are not unique. Valid values: 1 to 15 digits. Default value: empty. • To delete a phone prefix, use the **no** form of this command.
Step 7	**voicemail extension-length** {*number* | **min** *number* **max** *number*} **Example:** se-10-0-0-0(config-location)# voicemail extension-length 8 se-10-0-0-0(config-location)# voicemail extension-length min 5 max 9	(Optional) Configures the voice mail extension length for the location. • *number*—Configures the number of digits contained in extensions at the location. • **max** *number*—Sets the minimum number of digits for extensions. Default value: 2. • **min** *number*—Sets the maximum number of digits for extensions. Default value: 15. • To remove the configuration for the number of digits for extensions, use the **no** form of this command.
Step 8	**voicemail vpim-encoding** {**dynamic** | **G711ulaw** | **G726**} **Example:** se-10-0-0-0(config-location)# voicemail vpim-encoding G711ulaw	(Optional) Configures the encoding method used to transfer voice-mail messages to this location. • **dynamic**—Cisco Unity Express negotiates with the location to determine the encoding method • **G711ulaw**—Cisco Unity Express always sends messages as G711 mu-law .wav files. Set this only if the receiving system supports G711 mu-law encoding (such as Cisco Unity). • **G726**—Cisco Unity Express always sends messages as G726 (32K ADPCM). Use for low-bandwidth connections or when the system to which Cisco Unity Express is connecting does not support G711 u-law. • Default value: **dynamic**. • To return to the default value for encoding, use the **no** or **default** form of this command.
Step 9	**voicemail spoken-name** **Example:** se-10-0-0-0(config-location)# voicemail spoken-name	(Optional) Enables sending the spoken name of the voice-mail originator as part of the message. If the spoken name is sent, it is played as the first part of the received message. Default: enabled. • To disable sending the spoken name, use the **no** form of this command.
Step 10	**voicemail secure-messaging** **Example:** se-10-0-0-0(config-location)# voicemail secure-messaging	(Optional) Enables secure messaging for all incoming messages to the network location.

	Command or Action	Purpose

Step 11	**end**
	Example:
	`se-10-0-0-0(config-location)# end`
		Exits location configuration mode.

Step 12	**network local location id** *number* **Example:** `se-10-0-0-0(config)# network local location id 1`	Enables networking for the local Cisco Unity Express system identified by the location ID number. • To delete the local location, use the **no** form of this command. **Caution** If you delete the local network location and then save your configuration, when you reload Cisco Unity Express, the local network location will remain disabled. After Cisco Unity Express restarts, reenter the **network local location id** command to reenable networking at this location.
Step 13	**exit** **Example:** `se-10-0-0-0(config)# exit`	Exits configuration mode.
Step 14	**show network locations** **Example:** `se-10-0-0-0# show network locations`	(Optional) Displays the location ID, name, abbreviation, and domain name for each configured Cisco Unity Express location.
Step 15	**show network detail location id** *number* **Example:** `se-10-0-0-0# show network detail location id 9`	(Optional) Displays network information for the specified location ID, including the number of messages sent and received.
Step 16	**show network detail local** **Example:** `se-10-0-0-0# show network detail local`	(Optional) Displays network information for the local Cisco Unity Express location, including the number of messages sent and received.
Step 17	**show network queues** **Example:** `se-10-0-0-0# show network queues`	(Optional) Displays information about messages in the outgoing queue that are to be sent from this Cisco Unity Express system. The queue information contains three displays: one for urgent job queue information, one for normal job queue information, and one for running job information.

Examples

The following examples illustrate the output from the **show network** commands on company Mycompany's call control system in San Jose with remote voice-mail provided by six remote Cisco Unity Express sites.

```
se-10-0-0-0# show network locations

ID        NAME                          ABBREV  DOMAIN
101       'San Jose'                      SJC    sjc.mycompany.com
102       'Dallas/Fort Worth'             DFW    dfw.mycompany.com
201       'Los Angeles'                   LAX    lax.mycompany.com
202       'Canada'                        CAN    can.mycompany.com
301       'Chicago'                       CHI    chi.mycompany.com
302       'New York'                      NYC    nyc.mycompany.com
401       'Bangalore'                    BAN    bang.mycompany.com

se-10-0-0-0# show network detail location id 102

Name:                               Dallas/Fort Worth
Abbreviation:                       DFW
Email domain:                       dfw.mycompany.com
Minimum extension length:           2
Maximum extension length:           15
Phone prefix:
VPIM encoding:                       G726
Send spoken name:                    enabled
Sent msg count:                      10
Received msg count:                  110

se-10-0-0-0# show network detail local

Location Id:                          101
Name:                                 San Jose
Abbreviation:                         SJC
Email domain:                         sjc.mycompany.com
Minimum extension length:             2
Maximum extension length:             15
Phone prefix:
VPIM encoding:                        dynamic
Send spoken name:                     enabled
```

The following example illustrates output from the **show network queues** command. The output includes the following fields:

- ID—Job ID.
- Retry—Number of times that Cisco Unity Express has tried to send this job to the remote location.
- Time—Time when the job will be resent.

```
se-10-0-0-0# show network queues

Running Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
107   VPIM 06:13:26   20    jennifer        1001@sjc.mycompany.com
106   VPIM 06:28:25   20    jennifer        1001@sjc.mycompany.com

Urgent Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
123   VPIM 16:33:39   1     andy            9003@lax.mycompany.com

Normal Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
122   VPIM 16:33:23   1     andy            9001@lax.mycompany.com
```

```
124   VPIM 16:34:28   1     andy           9003@lax.mycompany.com
125   VPIM 16:34:57   1     andy           9002@lax.mycompany.com
126   VPIM 16:35:43   1     andy           9004@lax.mycompany.com
```

Disabling a Network Location

Cisco Unity Express supports disabling a location in the Cisco Unity Express network from sending or receiving Cisco Unity Express voice-mail messages. The system does not delete the network location from the Cisco Unity Express database.

To reestablish voice-mail message transmission to and from the network location, use the **enable** command.

Note Deleting the e-mail domain for a network location also disables the location.

SUMMARY STEPS

1. **config t**
2. **network location id** *location-id*
3. **no enable**
4. **y**
5. **end**
6. **exit**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0#` **`config t`**
	`se-10-0-0-0(config)#`
		Enters configuration mode.

Step 2	**`network location id`** *`location-id`*
	Example:
	`se-10-0-0-0(config)# network location id 15`
		Enters the location configuration mode for network location *location-id*.

Step 3	**`no enable`**
	Example:
	`se-10-0-0-0(config-location)# no enable`
	`!!!WARNING!!!:Disabling location will disable`
	`networking to/from this location.`
	`Do you wish to continue[n]?:`
		Disables the network location *location-id* from sending or receiving voice-mail messages.

Step 4	`Enter` **`yes`** `to disable the location.`	—

	Command or Action	Purpose

Step 5	**end**
	Example:
	`se-10-0-0-0(config-location)# end`
	`se-10-0-0-0(config)#`
		Exits location configuration mode.

Step 6	**exit**
	Example:
	`se-10-0-0-0(config)# exit`
	`se-10-0-0-0#`
		Exits configuration mode.

Examples

The following example displays the details for network location 15 with networking disabled:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# network location id 15
se-10-0-0-0(config-location)# no enable
!!!WARNING!!!:Disabling location will disable
networking to/from this location.
Do you wish to continue[n]?:y
se-10-0-0-0(config-location)# end
se-10-0-0-0(config)# exit
se-10-0-0-0#
se-10-0-0-0# show network detail location id 15

Name:                          houston
Abbreviation:                  hou
Email domain:                  hou.mycompany.com
Minimum extension length:      2
Maximum extension length:      15
Phone prefix:                  4
VPIM encoding:                 dynamic
Send spoken name:              enabled
Send vCard:                    enabled
State:                         disabled
VPIM broadcast ID:             vpim-broadcast
Sent msg count:                1
Received msg count:            1
```

The following example re-establishes voice-mail transmission to and from network location 15.

```
se-10-0-0-0# config t
se-10-0-0-0(config)# network location id 15
se-10-0-0-0(config-location)# enable
se-10-0-0-0(config-location
```

Downloading and Uploading Network Location Spoken Names

Use the Administration via Telephone (AvT) options to record the spoken names. You can download these spoken names from a Cisco Unity Express module to an external server or upload them from an external server to a Cisco Unity Express module.

The following sections describe this feature:

Required Data for This Procedure

- Network location ID
- URL of the file with the recorded spoken name on the server
- Login and password to the server

Downloading the Location Spoken Name

To download the network location spoken name, use the following command in Cisco Unity Express EXEC mode:

network copy spokenname url *url* **location id** *location-id* **loginname** *server-login* **password** *server-passwor*_**d**_

where the command arguments are defined as:

url	URL to the spoken name file on the server.
location-id	Network location ID.
server-login	Server login.
server-password	Server password.

The following example uploads the spoken name file rename.wav for location 500:

```
se-10-0-0-0# network copy spokenname url ftp://10.4.51.66/rename.wav location id 500
loginname admin password test
```

Uploading the Location Spoken Name

To upload the network location spoken name, use the following command in Cisco Unity Express EXEC mode:

network copy spokenname location id *location-id* **url** *url* **loginname** *server-login* **password** *server-password*

where the command arguments are defined as:

location-id	Network location ID.
url	URL to the spoken name file on the server.
server-login	Server login.
server-password	Server password.

The following example uploads the spoken name file rename.wav for location 500:

```
se-10-0-0-0# network copy spokenname location id 500 url ftp://10.4.51.66/rename.wav
loginname admin password test
)# end
se-10-0-0-0(config)# exit
```

Adding Remote Subscribers to the Local Directory

Cisco Unity Express permits the addition of remote subscribers to the local voice- mail directory.

The local Cisco Unity Express directory allows inclusion of frequently addressed remote subscribers. This capability allows a local voice-mail sender to address a remote recipient using dial-by-name. Additionally, the system provides the sender with a spoken name confirmation of the remote recipient so that the sender can verify that the name and location are correct.

Regardless of the license level, the NM-CUE-EC supports a maximum of 100 remote subscribers, the NM-CUE supports a maximum of 50 remote subscribers, and the AIM-CUE supports a maximum of 20 remote subscribers.

Use the AvT to record the spoken name for the remote subscribers. If a remote subscriber does not have a spoken name recorded, the system uses the remote extension number and location as confirmation to the local sender.

If the vCard option is configured, the remote subscriber's vCard updates the local system with the remote subscriber's first name, last name, or extension.

The following sections describe this feature:

- Configuring the Local Directory with Remote Subscribers, page 12
- Displaying Remote Subscribers, page 16
- Deleting Remote Subscriber Information, page 16

Configuring the Local Directory with Remote Subscribers

Configuring remote subscribers requires the following procedures:

- Configuring the local system for networking.

  CLI commands exist to configure the local and remote sites in the system. GUI screens are available to configure the location parameters.

- Configuring vCard information on the local system.

  See the chapter "Configuring a Location with vCard Information" on page 19 for that procedure.

- Adding the remote subscriber information to the local directory.

  This section describes this procedure.

- Adding a spoken name and location for the remote subscriber.

  The administrator uses the TUI to record a spoken name for the remote subscriber and a spoken name for the remote location.

  Configuring the remote subscriber can be done in the Cisco Unity Express configuration mode and the EXEC mode. Both modes permit adding the remote subscriber to the local directory but have different capabilities for other subscriber information. Use the **remote username location** command once, in either mode, to associate the remote subscriber with a network location.

Configuration Mode

Use this Cisco Unity Express configuration mode procedure to configure remote subscribers on the local system.

Required Data for This Procedure

The following information is required to configure remote subscribers on the local system:

- Remote username
- Remote subscriber's extension number
- Remote location ID

SUMMARY STEPS

1. **config t**
2. **remote username** *username* **location** *location-id* **create**
3. **remote username** *username* **phonenumber** *extension-number*
4. **exit**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
	`se-10-0-0-0(config)#`
		Enters configuration mode.

Step 2	**`remote username`** *`username`* **`location`** *`location-id`* **`create`**
	Example:
	`se-10-0-0-0(config)# remote username user1 location sjc create`
		Adds the subscriber with *username* at the location *location-id* to the local directory.
		An error message appears if one of the following conditions occurs:
		• A local subscriber, group, or remote subscriber exists with this username.
		• The maximum number of remote subscribers is already configured on the system.
		• *location-id* does not exist.
		• *location-id* is the local location.

	Command or Action	Purpose
Step 3	`remote username` *username* `phonenumber` *extension-number* **Example:** `se-10-0-0-0(config)# remote username user1 phonenumber 75555`	Associates the remote subscriber *username* with *extension-number*. The local system does not verify the remote extension number. An error message appears if one of the following conditions occurs: • *username* does not exist. • The length of *extension-number* does not fall within the maximum and minimum extension lengths for the subscriber's location.

Step 4	`exit`
	Example:
	`se-10-0-0-0(config)# exit`
	`se-10-0-0-0#`
		Exits configuration mode.

EXEC Mode

Use this Cisco Unity Express EXEC mode procedure to configure remote subscribers on the local system.

Required Data for This Procedure

The following information is required to configure remote subscribers on the local system:

- Remote username
- Remote location ID
- Remote subscriber's first name, last name, and full name for display purposes

SUMMARY STEPS

1. **remote username** *username* **location** *location-id* **create**
2. **remote username** *username* **fullname display** *display-name*
3. **remote username** *username* **fullname first** *first-name*
4. **remote username** *username* **fullname last** *last-name*

DETAILED STEPS

	Command or Action	Purpose
Step 1	**remote username** *username* **location** *location-id* **create** **Example:** `se-10-0-0-0# remote username user1 location sjc create`	Adds the subscriber with *username* at the location *location-id* to the local directory. An error message appears if one of the following conditions occurs: • A local subscriber, group, or remote subscriber exists with this username. • The maximum number of remote subscribers is already configured on the system. • *location-id* does not exist. • *location-id* is the local location.
Step 2	**remote username** *username* **fullname display** *display-name* **Example:** `se-10-0-0-0# remote username user1 fullname display “Al Brown”`	Associates the remote subscriber *username* with a display name.
Step 3	**remote username** *username* **fullname first** *first-name* **Example:** `se-10-0-0-0# remote username user1 fullname first Al`	Associates the remote subscriber *username* with a first name for display.
Step 4	**remote username** *username* **fullname last** *last-name* **Example:** `se-10-0-0-0# remote username user1 fullname last Brown`	Associates the remote subscriber *username* with a last name for display.

Examples

The following example configures several remote subscribers.

```
se-10-0-0-0# config t
se-10-0-0-0(config)# remote username user2 location sjc create
se-10-0-0-0(config)# remote username user2 phonenumber 84444
se-10-0-0-0(config)# remote username user5 location sjc create
se-10-0-0-0(config)# remote username user5 phonenumber 81111
se-10-0-0-0(config)# remote username user3 location nyc create
se-10-0-0-0(config)# remote username user3 phonenumber 92222
se-10-0-0-0(config)# remote username user4 location nyc create
se-10-0-0-0(config)# remote username user4 phonenumber 93333
se-10-0-0-0(config)# end
se-10-0-0-0# remote username user2 fullname display “User 2”
se-10-0-0-0# remote username user2 fullname first User
se-10-0-0-0# remote username user2 fullname last 2
se-10-0-0-0# remote username user5 fullname display “User 5”
se-10-0-0-0# remote username user5 fullname first User
se-10-0-0-0# remote username user5 fullname last 5
se-10-0-0-0# remote username user3 fullname display “User” 3
se-10-0-0-0# remote username user3 fullname first User
se-10-0-0-0# remote username user3 fullname last 3
se-10-0-0-0# remote username user4 fullname display “User 4”
```

```
se-10-0-0-0# remote username user4 fullname first User
se-10-0-0-0# remote username user4 fullname last 4
se-10-0-0-0#
```

Displaying Remote Subscribers

Several commands are available to display remote subscribers.

Displaying All Remote Subscribers

The following command displays all remote subscribers configured on the local system:

show remote users

The output for this command may appear similar to the following:

```
se-10-0-0-0# show remote users

user2
user5
user3
user4
```

Displaying a Specific Remote Subscriber

The following command displays the details for a specific remote subscriber:

show remote user detail username *username*

where *username* is the specific remote subscriber.

The output for this command may appear similar to the following:

```
se-10-0-0-0# show remote user detail username user2
Full Name: User 2
First Name: User
Last Name: 2
Nick Name:
Extension: 84444
Location Id: sjc
```

Deleting Remote Subscriber Information

Several commands are available to delete remote subscriber information from the local directory.

Deleting an Extension Number

The following configuration mode command deletes a remote subscriber’s extension number:

no remote username *username* **phonenumber** *extension-number*

where *username* is the name of the remote subscriber and *extension-number* is the remote subscriber’s extension.

The following example deletes extension 75555 from remote subscriber User 2:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# no remote username user2 phonenumber 84444
se-10-0-0-0(config)# end
```

Deleting a Remote Subscriber Entry in Local Directory

The following EXEC mode command deletes the remote subscriber from the local directory:

remote username *username* **delete**

where *username* is the name of the remote subscriber.

The following example deletes the remote subscriber User 2:

```
se-10-0-0-0# remote username user2 delete
```

Deleting a Remote Username

The following EXEC mode commands delete the remote subscriber's name:

no remote username *username* **fullname display** *display-name*

no remote username *username* **fullname first** *first-name*

no remote username *username* **fullname last** *last-name*

where *username* is the name of the remote subscriber, *display-name* is the remote subscriber's display name, *first-name* is the remote subscriber's first name, and *last-name* is the remote subscriber's last name.

The following example deletes the display name from remote subscriber User 2:

```
se-10-0-0-0# no remote username user2 fullname display "User 2"
```

The following example deletes the first name from remote subscriber User 2:

```
se-10-0-0-0# no remote username user2 fullname first User
```

The following example deletes the last name from remote subscriber User 2:

```
se-10-0-0-0# no remote username user2 fullname last 2
```

Downloading and Uploading Remote Subscriber Spoken Names

Use the Administration via Telephone (AvT) options to record the spoken names. You can download these spoken names from the Cisco Unity Express module to an external server or upload the names from an external server to the Cisco Unity Express module.

The following sections describe this feature:

Required Data for This Procedure

- Username
- URL of the file with the recorded spoken name on the server
- Login and password to the server

Downloading the Remote Subscriber Spoken Name

To download the remote subscriber spoken name, use the following command in Cisco Unity Express EXEC mode:

remote copy spokenname url *url* **username** *username* **loginname** *server-login* **password** *server-password*

where the command arguments are defined as:

url	URL to the spoken name file on the server.
username	Remote subscriber ID.
server-login	Server login.
server-password	Server password.

The following example uploads the spoken name file user1.wav for remote subscriber user1:

```
se-10-0-0-0# remote copy spokenname url ftp://10.4.51.66/user1.wav username user1
loginname admin password test
```

Uploading the Remote Subscriber Spoken Name

To upload the network location spoken name, use the following command in Cisco Unity Express EXEC mode:

remote copy spokenname url *url* **username** *username* **loginname** *server-login* **password** *server-password*

where the command arguments are defined as:

username	Remote user ID.
url	URL to the spoken name file on the server.
server-login	Server login.
server-password	Server password.

The following example uploads the spoken name file user1.wav for remote subscriber user1:

```
se-10-0-0-0# remote copy spokenname username user1 url ftp://10.4.51.66/user1.wav
loginname admin password test
```

Configuring a Location with vCard Information

Cisco Unity Express supports sending and receiving vCard information in voice-mail messages. A remote subscriber's vCard information contains the subscriber's first name, last name, and extension. Cisco Unity Express uses the vCard information from incoming voice profile for Internet mail (VPIM) messages and the recorded spoken name to populate and update a least recent used (LRU) cache with the remote subscriber information. (For more information about configuring the spoken name, see "Adding Remote Subscribers to the Local Directory" on page 12.)

When addressing a message to a remote subscriber, the local sender hears the spoken name as a confirmation of the intended recipient. The LRU cache is a source of the spoken name. The number of subscribers that the LRU cache stores depends on the hardware module installed. See the *Release Notes for Cisco Unity Express* for the maximum cached users supported.

The following sections describe this feature:

- Enabling and Disabling vCard Information, page 19
- Displaying vCard Status, page 20

Enabling and Disabling vCard Information

The remote location numeric ID is required to enable the location to receive vCard information.

The system default is to send the vCard information.

SUMMARY STEPS

1. **config t**
2. **network location id** *location-id*
3. **voicemail vcard**
4. **end**
5. **exit**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**config t**
	Example:
	`se-10-0-0-0# config t`
	`se-10-0-0-0(config)#`
		Enters configuration mode.

Step 2	**network location id** *location-id* **Example:** `se-10-0-0-0(config)# network location id 15`	Enters the location configuration mode for network location *location-id*.

	Command or Action	Purpose

Step 3	`voicemail vcard`
	Example:
	`se-10-0-0-0(config-location)# voicemail vcard`
		Enables the network location *location-id* to receive vCard information.
		To disable the receipt of vCard information, use the **no** form of this command.

Step 4	`end`
	Example:
	`se-10-0-0-0(config-location)# end`
	`se-10-0-0-0(config)#`
		Exits location configuration mode.

Step 5	`exit`
	Example:
	`se-10-0-0-0(config)# exit`
	`se-10-0-0-0#`
		Exits configuration mode.

Examples

The following example enables receipt of vCard information to network locations 23 and nyc:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# network location 23
se-10-0-0-0(config-location)# voicemail vcard
se-10-0-0-0(config-location)# end
se-10-0-0-0(config)# network location nyc
se-10-0-0-0(config-location)# voicemail vcard
se-10-0-0-0(config-location)# end
se-10-0-0-0(config)# exit
```

The following command disables receipt of vCard information to network location nyc:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# network location nyc
se-10-0-0-0(config-location)# no voicemail vcard
se-10-0-0-0(config-location)# end
se-10-0-0-0(config)# exit
```

Displaying vCard Status

Several commands are available to display vCard status.

Displaying vCard Status For a Specific Location

The following Cisco Unity Express EXEC mode command displays details about a specific remote location:

show network detail location id *location-id*

where *location-id* is the remote location number.

The following example displays details about network location 15, which has vCard enabled:

```
se-10-0-0-0# show network detail location id 15

Name:                         houston
Abbreviation:                 hou
Email domain:                 hou.mycompany.com
Minimum extension length:     2
Maximum extension length:     15
Phone prefix:                 4
VPIM encoding:                dynamic
Send spoken name:             enabled
Send vCard:                   enabled
State:                        enabled
VPIM broadcast ID:            vpim-broadcast
Sent msg count:               0
Received msg count:           0
```

Displaying vCard Status For the Local System

The following EXEC mode command displays details for the local Cisco Unity Express system:

show network detail local

The following example displays details for the local system with vCard enabled:

```
se-10-0-0-0# show network detail local

Location ID:                  10
Name:                         SanJoseCA
Abbreviation:                 sjc
Email domain:                 sjc.mycompany.com
Minimum extension length:     2
Maximum extension length:     15
Phone prefix:
VPIM encoding:                G726
Send spoken name:             enabled
Send vCard:                   enabled
State:                        enabled
VPIM broadcast ID:            vpim-broadcast
```

Configuring the LRU Cache

Cisco Unity Express supports a least recently used (LRU) cache that contains vCard information about remote subscribers. An LRU cache is a database of remote subscribers' first names, last names, and spoken names. These remote subscribers are not configured in the Remote User Directory. The subscribers contained in the cache are referred to as cached users.

Network messages update the contents of the LRU cache. When a local sender addresses a voice-mail message to a remote subscriber, the system accesses this information to send a spoken name confirmation about the remote subscriber to the local sender. Each time a network message arrives from a cached user or each time a local sender sends a voice message to a cached user, the system updates the timestamp of the cached user's entry in the LRU cache.

When the LRU cache reaches its maximum capacity, a new entry erases the existing entry with the oldest timestamp. This means that the next time a local sender calls a remote subscriber, the sender will not receive a spoken name confirmation if the remote subscriber is no longer in the LRU cache. The number of subscribers that the LRU cache stores depends on the hardware module installed. See the *Release Notes for Cisco Unity Express* for the maximum cached users supported.

Do one or both of the following to avoid the inconsistent confirmation response:

- To ensure that a sender always receives a spoken name confirmation for a remote subscriber, configure the remote subscriber in to the Remote User Directory.
- Disable the LRU cache.

The LRU cache contents are saved after system reloads.

By default, the LRU cache is enabled on the local system. Use the GUI **Defaults > Voice Mail** option or the CLI commands described below to change the status of the LRU cache.

The following sections describe this feature:

- Enabling and Disabling the LRU Cache, page 22
- Displaying LRU Cache Data, page 22

Enabling and Disabling the LRU Cache

Use the following Cisco Unity Express configuration mode command to enable the LRU cache on the local system:

remote cache enable

The following example illustrates enabling the LRU cache on the local system:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# remote cache enable
se-10-0-0-0(config)# exit
```

Use the following Cisco Unity Express configuration mode command to disable the LRU cache on the local system. Disabling the cache clears all cache entries and prevents storage of new subscriber entries.

no remote cache enable

The following example illustrates disabling the LRU cache on the local system:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# no remote cache enable
se-10-0-0-0(config)# exit
```

Displaying LRU Cache Data

Use the following Cisco Unity Express EXEC mode command to display the local system’s LRU cache data:

show remote cache

The system displays the location ID, location name , extension, and last accessed time for each cached user.

```
se-10-0-0-0# show remote cache

Remote user cache is enabled
ID            LOCATION  EXTENSION    LAST ACCESSED TIME
3014001         sjc     5555         Tue Sep 21 10:38:28 PDT 2004
6661005         nyc     1111         Tue Sep 21 14:55:11 PDT 2004
```

Configuring the Broadcast Message VPIM ID for a Network Location

Use the following procedure to configure the VPIM ID for broadcast messages for a network location.

Required Data for This Procedure

- Network location ID
- Network location VPIM ID

SUMMARY STEPS

1. **config t**
2. **network location id** *location-id*
3. **voicemail broadcast vpim-id** *vpim-id*
4. **end**
5. **exit**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
	`se-10-0-0-0(config)#`
		Enters configuration mode.

Step 2	**`network location id`** *`location-id`*
	Example:
	`se-10-0-0-0(config)# network location id 15`
		Specifies the network location.

Step 3	**`voicemail broadcast vpim-id`** *`vpim-id`*
	Example:
	`se-10-0-0-0(config-location)# voicemail broadcast vpim-id 159a`
		Enters location configuration mode and specifies the VPIM ID for the location. Valid VPIM IDs contain letters, numbers, underscore (_), dash (-), and dot (.). The maximum length is 32 characters.

	Command or Action	Purpose

Step 4	**end**
	Example:
	`se-10-0-0-0(config-location)# end`
	`se-10-0-0-0(config)#`
		Exits location configuration mode.

Step 5	**exit**
	Example:
	`se-10-0-0-0(config)# exit`
	`se-10-0-0-0#`
		Exits configuration mode.

Examples

The following example sets the VPIM ID to ny-270 for network location 150:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# network location id 150
se-10-0-0-0(config-location)# voicemail broadcast vpim-id ny-270
se-10-0-0-0(config-location)# end
se-10-0-0-0(config)# exit
```

Troubleshooting Commands

To troubleshoot network configuration in Cisco Unity Express, use the following commands in EXEC mode.

SUMMARY STEPS

1. **trace networking smtp** [**all** | **receive** | **send** | **work**]
2. **trace networking vpim** [**all** | **receive** | **send**]
3. **trace networking sysdb** [**all**]
4. **trace networking dns** [**all**]
5. **trace networking database** [**all** | **connection** | **execute** | **garbage** | **largeobject** | **mgmt** | **query** | **results** | **transaction**]
6. **trace networking jobqueue** [**all** | **job** *number*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**trace networking smtp** [**all** | **receive** | **send** | work] **Example:** `se-10-0-0-0# trace networking smtp all`	Enables tracing for SMTP network functions. • **all**—Traces every SMTP activity. • **receive**—Traces SMTP receiving. • **send**—Traces SMTP sending. • **work—**Traces when a job is put in to or removed from the SMTP queue.
Step 2	**trace networking vpim** [**all** | **receive** | **send**] **Example:** `se-10-0-0-0# trace networking vpim all`	Enables tracing for VPIM network functions. • **all**—Traces every VPIM activity. • **receive**—Traces VPIM receiving. • **send**—Traces VPIM sending.
Step 3	**trace networking sysdb [all]** **Example:** `se-10-0-0-0# trace networking sysdb`	Enables tracing for sysdb events. • **all**—Traces every sysdb event.
Step 4	**trace networking dns** [**all**] **Example:** `se-10-0-0-0# trace networking dns`	Enables tracing for DNS activities. Displays DNS lookups that are performed and results that are given when an administrator adds an e-mail domain to a location, and when a domain is verified and resolved using SMTP. • **all**—Traces every DNS event.
Step 5	**trace networking database** [**all** | **connection** | **execute** | **garbage** | **largeobject** | **mgmt** | **query** | **results** | **transaction**]] **Example:** `se-10-0-0-0# trace networking database results`	Enables tracing for database functions. The following keywords specify the type of traces: • **all**—Every database event. • **connection**—Database connections. • **execute—**Inserts and updates performed on database. • **garbage**—Garbage collection process. • **largeobject**—Large object reads and writes to the database. • **mgmt**—Database management processes. • **query**—Queries performed on the database. • **results**—Results of queries, inserts, and updates. • **transactions—**Start and end of database transactions.
Step 6	**trace networking jobqueue [all** | **job** ***number*]** **Example:** `se-10-0-0-0# trace networking jobqueue job 101`	Enables tracing for the job queue. • **all**—Traces all jobs in the queue. • **job** *number*—Traces a specified job in the queue.

CHAPTER 14

Configuring Distribution Lists

This chapter describes distribution lists and contains the following sections:

Overview of Distribution Lists

Distribution lists allow subscribers to send a voice-mail message to multiple recipients at the same time. The sender can send voice messages to distribution lists only on the local system. The sender cannot address a voice message to a distribution list on a remote system.

Cisco Unity Express supports two types of distributions lists:

- Public distribution lists
- Private distribution lists

Properties of Distribution Lists

Cisco Unity Express distribution lists have the following properties:

- Members of a distribution list can be any combination of the following:
  - Local and remote subscribers

    A remote subscriber that is statically configured on the local system can be a member of a distribution list. However, that remote subscriber cannot own a distribution list on the local system.
  - General delivery mailboxes (GDMs)
  - Groups

  - Other distribution lists
  - Blind addresses

    Specify the location ID and extension of the blind address. The system verifies the location ID and the extension length.Members—Distribution lists can comprise a variety of members: local subscribers, remote subscribers, blind addresses, GDMs, groups, and other lists.

    A public list member can be another public list but may not be a private list.

    A private list member can be any public list and may be another private list owned by the same subscriber.

    When a subscriber addresses a voice message to a public or private distribution list, the system verifies that the list has members. If the list is empty, the system plays a prompt indicating that the list contains no members and does not allow the list to be used as a recipient of the message.

- Recursive distribution lists are permitted. For example, list A can be a member of list B, and list B can be a member of list A.
- The system generates a special public distribution list, the **everyone** list, which contains all the local subscribers. It does not contain the local groups, GDMs, and other lists. You cannot add to or delete members from this list, assign an owner to this list, or delete this list.
- Each list must have a unique name or number.

  Valid names have a maximum of 64 characters and include the letters A to Z, a to z, digits 0 to 9, underscore (_), dot (.), and dash (-). Names must start with a letter. Spaces are not allowed.
- The owner of a public or private distribution list can record a spoken name for the list using the TUI. Recording or uploading the spoken name cannot be done through the GUI or CLI.

  The everyone public list has a default spoken name. An administrator can change this name using the TUI.
- If a local or remote subscriber is deleted from the system, the subscriber is no longer a member or owner (in the case of local subscribers) of any public or private distribution list on the system. The system deletes all private lists owned by the deleted local subscriber. If the local subscriber was the sole owner of a public distribution list, the Administrators group assumes ownership of that list.

  This same rules apply to the removal of a group, except that the system does not delete any private lists.
- Access to remote distribution lists—A local subscriber cannot modify a remote distribution list and cannot use a remote distribution list as the recipient of a voice message.

Public Distribution Lists

All local subscribers of the system can use a public distribution list to address their voice-mail messages.

Use the Cisco Unity Express graphical user interface (GUI), telephone user interface (TUI), or command-line interface (CLI) to create and manage public distribution lists.

Table 14-1 describes the features of a public distribution list.

Table 14-1 Features of Public Distribution Lists

Feature	Limits	Description
Maximum number of lists	Depends on the Cisco Unity Express hardware. See the *Release Notes for Cisco Unity Express* for more information.	Maximum number of lists allowed on the system This number does not include the **everyone** list.
List number	Maximum 15 digits	A public distribution list must have a unique number. The **everyone** list has the number 9999 by default. The administrator can change this number using only the GUI menu option **Voice Mail > Distribution Lists > Public Lists**.

Number of owners of a single list	Minimum=0
	Maximum=50
		The everyone list cannot have an owner.
		The owner can be any local subscriber or group. If the owner is a group, all the members of that group are owners of the list.
		Members of the Administrators group are implicit owners of all public distribution lists. If all the owners of a list are deleted, the Administrator group continues to have ownership of the list.
		A list owner does not have to be a member of that list.

Maximum number of list members on the local system	Depends on the Cisco Unity Express hardware. See the *Release Notes for Cisco Unity Express* for more information.	This total is the sum of all members in all public lists on the local system, excluding the **everyone** list.
Maximum number of list owners on the local system	50	This total is the sum of all owners of all public lists on the system, excluding the **everyone** list. This maximum applies to all voice mailbox license levels.
Creating, editing, and deleting a public list	Not applicable	Local subscribers belonging to the Administrators group, or to any group with the **ManagePublicList** privilege, can create public lists. Owners of a public list can edit or delete it.

Private Distribution Lists

Any local subscriber can create private distribution lists that are accessible only to that subscriber.

Table 14-2 describes the features of private distribution lists.

Table 14-2 Features of Private Distribution Lists

Feature	Limits	Description
Maximum number of lists per subscriber	5	Maximum number of lists a local subscriber can create.
List number	1-5	Valid range for private list numbers.
Number of owners	1	The owner of a private distribution list is the local subscriber who created it. The owner of a private list cannot be changed.
List creation and management		Use the GUI or TUI to create and manage private lists. No CLI commands are available to create or manage private lists.
Maximum number of members per subscriber	50	The sum of all members in all private lists owned by a subscriber.
Viewing private lists	Not applicable	The list owner, members of the Administrator group, or any group with the ViewPrivateList privilege can use the GUI to view the details of private lists owned by a specific subscriber. CLI commands are available to view private lists owned by any local subscriber. No special privilege is required to use the CLI commands.

Differences Between Cisco Unity Express and Cisco Unity Distribution Lists

Table 14-3 describes important differences between the Cisco Unity Express and Cisco Unity distribution lists.

Table 14-3 Differences Between Cisco Unity Express and Cisco Unity Distribution Lists

Feature	Cisco Unity Express Implementation	Cisco Unity Implementation
Managing distribution lists through the TUI	Permitted for public and private distribution lists. Extra TUI menu options are available for managing public lists. Key presses for private distribution lists are the same as for Cisco Unity.	Not permitted for public distribution lists. Permitted for private distribution lists.

Table 14-3 Differences Between Cisco Unity Express and Cisco Unity Distribution Lists

Feature	Cisco Unity Express Implementation	Cisco Unity Implementation
Creating distribution lists	Created and deleted by the subscriber using TUI menus. Implicit list creation is available for both public and private lists. If a subscriber tries to add a member to a nonexistent list, the system creates the list and adds the member to it. If a subscriber tries to record the spoken name for a nonexistent list, the system creates the list and records the spoken name. In both cases, the subscriber hears a prompt stating that a new list was created.	Created by the system. No TUI options are available for subscribers to create or delete distribution lists.
Removing members of a list	The subscriber removes a list member by name or extension, similar to the dial-by-name and extension flow for addressing voice messages.	The system assigns a sequence of numbers to the list members' names and extensions. The subscriber presses the sequence number to remove the member.
Adding private lists to another list	A private list may be added to another private list owned by the same subscriber.	Not permitted.

Configuring Public Distribution Lists

Use this procedure to create or modify public distribution lists.

Note Use the TUI or GUI to create private distribution lists. No CLI commands are available for private distribution lists.

Beginning in release 3.2, you can add nonsubscribers to distribution lists. This enables the delivery of voice messages to people who do not have a mailbox on the system by using a single address to reference a list of addresses when sending the message. By using this single aggregated address, a subscriber can send a single message to all the recipients included in the distribution list.

When nonsubscriber numbers are submitted for addition to a distribution list, they are checked against the nonsubscriber restriction table. If a nonsubscriber address is restricted, it is not added to the distribution list. If you change a restriction table after a list has been created, the system does not revalidate distribution lists. Instead, distribution lists are revalidated when they is used to send outgoing mail to nonsubscriber addresses and any addresses that are restricted are removed from the list of recipients. In addition, there is no change in the way the existing system sends the message. The system still checks the nonsubscriber restriction table before sending a message to a nonsubscriber, future message queues, a backup restore, and so on.

Prerequisites

- Local and remote subscribers must be previously defined on the system.
- To add nonsubscribers to distribution lists, you must have Cisco Unity Express 3.2 or a later version

Required Data for This Procedure

The following information is required to create a public distribution list:

- List name and number
- (Optional) List description—The description can have a maximum of 64 characters.

The following information is required to add members to a distribution list:

- Member type local (subscriber, group, GDM, distribution list, remote subscriber, or blind address)
- Member name or extension

SUMMARY STEPS

1. **config t**
2. **list name** *list-name* **number** *list-number* **create**
3. **list number** *list-number* **owner** *owner-ID*
4. **list number** *list-number* **member** {*member-name* | *extension*} **type** {**group** | **user** | **gdm** | **list** | **remote** | **blind** | **nonsubscriber**}
5. (Optional) **list number** *list-number* **description** *description*
6. **exit**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
	`se-10-0-0-0(config)#`
		Enters configuration mode.

Step 2	`list name list-name number list-number create`
	Example:
	`se-10-0-0-0(config)# list name engineers number 5 create`
		Creates a list named *list-name* with the number *list-number*.
		• *list-number* can be up to 15 digits in length.
		• An error message appears if *list-name* or *list-number* already exists.
		• An error message appears if the maximum number of public lists already exists.

	Command or Action	Purpose
Step 3	**list number** *list-number* **owner** *owner-ID* **Example:** `se-10-0-0-0(config)# list number 5 owner user12`	Assigns an owner to the list. The owner can be a local subscriber or a local group. • An error message appears if *listnumber* or *owner-ID* does not exist. • An error message appears if the maximum number of owners on the system has been reached. • Use the **no** form of the command to remove the owner of the list.

Step 4	**list number** *list-number* **member** {*member-name* | *extension*} **type** {**group** | **user** | **gdm** | **list** | **remote** | **blind** | **non-subscriber**}
	Example:
	`se-10-0-0-0(config)# list number 5 member user8 type user`
	`se-10-0-0-0(config)# list number 5 member managers type group`
	`se-10-0-0-0(config)# list number 5 member sale type gdm`
	`se-10-0-0-0(config)# list number 5 member mylist3 type list`
	`se-10-0-0-0(config)# list number 5 member user15 type remote`
	`se-10-0-0-0(config)# list number 5 member user5555 type blind`
		Assigns a member to the list. Valid member types include:
		• **group**—Local or remote group
		• **user**—Local subscriber
		• **gdm**—Local or remote GDM
		• **list**—Any local public list that belongs to the list owner
		• **remote**—Remote subscriber
		• **blind**—Blind address of a remote subscriber
		• **nonsubscriber**—nonsubscriber (someone who do not have a mailbox on the system)
		Valid members include:
		• Local or remote subscriber
		• Group ID
		• GDM name
		• Voice mailbox extension (blind address)
		• List number
		• List name
		An error message appears if the list or member does not exist.
		An error message appears if the maximum number of public list members has been reached.
		Use the **no** form of this command to delete the member from the list.

	Command or Action	Purpose
Step 5	**list number** *list-number* **description** *description* **Example:** `se-10-0-0-0(config)# list number 5 description "SJ Engineers"`	(Optional) Adds a description to the public list. Enclose the description in quotes if the description is more than one word. An error message appears if the list does not exist. Use the **no** form of this command to delete the description.

Step 6	**exit**
	Example:
	`se-10-0-0-0(config)# exit`
	`se-10-0-0-0#`
		Exits configuration mode.

Examples

The following example creates public distribution list number 5 for engineers:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# list name engineers number 5 create
se-10-0-0-0(config)# list number 5 owner User1
se-10-0-0-0(config)# list number 5 owner progmgrs
se-10-0-0-0(config)# list number 5 member User1 type user
se-10-0-0-0(config)# list number 5 member User2 type user
se-10-0-0-0(config)# list number 5 member betamgrs type group
se-10-0-0-0(config)# list number 5 member tech type gdm
se-10-0-0-0(config)# list number 5 member 87777 type blind
se-10-0-0-0(config)# exit
```

Configuring Private Distribution Lists

Local subscribers can configure their private distribution lists using the GUI menu option **VoiceMail > Distribution Lists > My Private Lists** or by using the TUI.

No CLI commands are available for configuring private lists.

Displaying Distribution Lists

Several commands are available to display distribution lists and their members.

Displaying All Public Distribution Lists

The following Cisco Unity Express EXEC mode command displays all the public distribution lists on the local system:

show lists public

This command displays the lists in alphabetical order with each list name, number, and type, followed by the details of each list.

Output from this command may appear similar to the following:

```
se-10-0-0-0# show lists public

List number              List Name                Type
5                        engineers                Public
9999                     everyone                 Public
Number: 5
Name: engineers
Type: Public
Description:
Owners:
       user15        Local User
       progmgrs      Group
Members:
       user15        Local User
       user23        Local User
       progmgrs      Group
       techs         General Delivery Mailbox
       tech25        Remote User
       nyc5555       Blind Address
```

Displaying Details of a Public Distribution List

The following Cisco Unity Express EXEC mode command displays details of a specific public distribution list:

show list detail public {**name** *list-name* | **number** *list-number*}

where *list-name* is the name of the list and *list-number* is the number of the list.

This command displays the list number, list name, list type, owners, and members of the list with their type categories.

Output from this command may appear similar to the following:

se-10-0-0-0# **show list detail public name engineers**

Number: 5

Name: engineers

```
Type: Public
Description:
Owners:
     user15 user
     progmgrs group
Members:
     user15 user
     betamgrs group
     techs gdm
     tech25 remote
     nyc5555 blind
```

The command **show list detail public number 5** would display the same output as shown above.

Displaying an Owner's Lists

The following Cisco Unity Express EXEC mode command displays the public and private lists owned by a specific subscriber or group:

show lists owner *owner-id*

where *owner-id* is the name of a subscriber or group. An error message appears if *owner-id* does not exist.

This command displays the list number, list name, and list type for all the public and private lists that belong to the specified owner. The lists appear in alphabetical order, private lists first followed by public lists.

Output from this command may appear similar to the following:

```
se-10-0-0-0# show lists owner user15

Owner: user15
   List Number      List Name      List Type
   4                projectteam    Private List
   5                engineers      Public List
   25               managers       Public List
```

Displaying Details of a Private Distribution List

The following Cisco Unity Express EXEC mode command displays the details of a specific private distribution list for a specific subscriber:

show list detail private {**name** *list-name* | **number** *list-number*} **owner** *owner-id*

where *list-name* is the name of the private list, *list-number* is the number of the private list, and *owner-id* is the name of a subscriber. An error message appears if *list-name*, *list-number*, or *owner-id* does not exist.

This command displays the list number, list name, owner, members, and member types of the specified private distribution list.

Output from this command may appear similar to the following:

```
se-10-0-0-0# show list detail private name projectteam owner user15
Number: 4
Name: projectteam
Type: Private
Description:
Owner:
      user15
Members:
      tech1 user
      tech2 user
      testers group
      tech10 remote
```

The command **show lists detail private number 4 owner user15** would display the same output as shown above.

Deleting Distribution Lists

The TUI and GUI have options for deleting private and public distribution lists. Additionally, the CLI has a command for deleting public lists on the local system.

Use the following Cisco Unity Express configuration mode command to delete public distribution lists:

list number *list-number* **delete**

where *list-number* is the number of the public distribution list.

The following example deletes list number 10 from the local system:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# list number 10 delete
se-10-0-0-0(config)# exit
se-10-0-0-0#
```

CHAPTER 15

Configuring Security

This chapter describes the procedures for configuring and managing security certificates and includes the following sections:

Overview of Security

Cisco Unity Express provides the infrastructure for configuring and managing security certificates.

You can obtain these certificates using either of the following methods:

- Generate self-signed certificates using the RSA encryption algorithm with a modulus size from 512 to 1024.

  Note For self-signed certificates, certain clients display a warning message and require subscribers to accept the certificate.

- Obtain the certificates from the Certificate Authority (CA). Import these certificates from the Cisco Unity Express console or upload them from an FTP or HTTP server.

The certificates use either the Distinguished Encoding Rules (DER) or Privacy Enhanced Mail (PEM) encoding formats.

Any feature which requires certificates to establish a secure connection can use this infrastructure.

Note This configuration and infrastructure apply only to Cisco Unity Express devices. For other devices, see their respective device documentation.

Obtaining a Certificate and Private Key

Cisco Unity Express requires a default certificate and private key before the IMAP server is configured for SSL and can accept SSL connections. Two procedures are available to obtain a certificate-key pair:

- Generating a Certificate-Key Pair—A command automatically generates the pair.
- Importing a Certificate-Key Pair—A command imports a pair from the console or a remote server.

Generating a Certificate-Key Pair

Starting in Cisco Unity Express configuration mode, use the following command to have the Cisco Unity Express system generate a certificate-key pair:

crypto key generate [**rsa** {**label** *label-name* | **modulus** *modulus-size*} | **default**]

where **rsa** is the supported encryption algorithm, *label-name* is the name assigned to the certificate-key pair, *modulus-size* is a number between 512 and 1024 used for generating a key, and **default** designates the generated certificate-key pair as the system default. If you do not select any keywords or do not specify a label, the system automatically generates a certificate-key pair with a name in the format *hostname.domainname*.

The following example generates a default certificate-key pair with the label alphakey.myoffice.

```
se-10-0-0-0# config t
se-10-0-0-0(config)# crypto key generate label alphakey.myoffice modulus 600 default
se-10-0-0-0(config)# end
```

Importing a Certificate-Key Pair

Starting in Cisco Unity Express configuration mode, use the following command to import a certificate-key pair:

crypto key import rsa label *label-name* {**der url** {**ftp:** | **http:**} | **pem** {**terminal** | **url** {**ftp:** | **http:**}} [**default**]

where the parameters are defined as follows:

- **rsa** is the supported encryption algorithm.
- **label** *label-name* is the name assigned to the certificate-key pair.
- **der** and **pem** are the encoding formats of the imported certificate.
- **terminal** indicates that the import is coming from the console.
- **url** {**ftp:** | **http:**} indicates that the import is coming from a remote server at the specified URL.
- **default** designates the imported certificate-key pair as the system default.

The command prompts you for the certificate and private key information.

The following example imports a default certificate-key pair with the label alphakey.myoffice.

```
se-10-0-0-0# config t
se-10-0-0-0(config)# crypto key import rsa label alphakey.myoffice pem terminal

Enter certificate...
End with a blank line or “quit” on a line by itself

Enter private key...
Private key passphrase?
```

```
End with a blank line or "quit" on a line by itself

quit

Import succeeded.
```

Displaying the Certificate-Key Pairs

Starting in Cisco Unity Express EXEC mode, use the following command to display a list of all certificate-key pairs on the system or to display a specific certificate-key pair.

show crypto key {**all** | **label** *label-name*}

where **all** displays all certificate-key pairs on the system and **label** *label-name* displays information for the specified certificate-key pair.

The following is sample output for the **show crypto key** command:

```
se-10-0-0-0# show crypto key label alphakey.myoffice

Label name: alphakey.myoffice [default]
Entry type:Key Entry
Creation date: Mon Jun 10 14:23:09 PDT 2002
Owner: CN=se-1-100-6-10.localdomain, OU='', O='', L='', ST='', C=''
Issuer: CN=se-1-100-6-10.localdomain, OU='', O='', L='', ST='', C=''
Valid from: Mon Jun 10 14:23:06 PDT 2002 until: Sun Sep 08 14:23:06 PDT 2002
```

Changing the Default Certificate-Key Pair

Use the following command in Cisco Unity Express configuration mode to designate a certificate-key pair as the system default.

[**no**] **crypto key label** *label-name* **default**

where **label** *label-name* is the certificate-key pair that is designated as the new system default.

If several certificate-key pairs exist on the system and none of them are the system default, use this command to designate one of them as the system default.

If a certificate-key pair exists as the default, designating another pair as the default automatically removes the default status from the first pair.

The **no** form of the command does not delete the certificate-key pair; it only removes the system default designation.

The system displays an error message if the certificate-key pair does not exist.

Deleting a Certificate-Key Pair

Starting in Cisco Unity Express configuration mode, use the following command to delete a certificate-key pair.

crypto key delete {**all** | **label** *label-name*} where **all** deletes all certificate-key pairs on the system and **label** *label-name* deletes information for the specified certificate-key pair.

The following deletes the certificate-key pair labeled alphakey.myoffice:

```
se-10-0-0-0#  config t
se-10-0-0-0(config)#  crypto key delete label alphakey.myoffice
se-10-0-0-0(config)# end
```

An error message appears if the certificate-key pair does not exist.

Accessing the Cisco Unity Express GUI Using HTTPS

You can set up the system to access the Cisco Unity Express GUI using HTTPS. See the following sections:

- Enabling HTTPS Access to the Cisco Unity Express GUI (Versions 3.0 and 3.1)
- Enabling HTTPS Access to the Cisco Unity Express GUI (Versions 3.2 and Higher)

Enabling HTTPS Access to the Cisco Unity Express GUI (Versions 3.0 and 3.1)

Beginning with Cisco Unity Express 3.0, you can use HTTPS to access the Cisco Unity Express GUI. This procedure requires that Cisco Unity Express is reloaded. The implementation beginning with version 3.2 does not require a system reload.

To set up HTTPS access to the the Cisco Unity Express GUI, perform the following steps:

Prerequisites

- Cisco Unity Express 3.0 or 3.1

SUMMARY STEPS

1. **config t**
2. **crypto key generate**
3. end
4. **reload**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.

Step 2	**crypto key generate label**
	Example:
	`se-10-0-0-0(config)# crypto key generate`
	`Key generation in progress. Please wait...`
	`The label name for the key is mainkey.ourcompany`
		Generates a self-signed certificate and private key.

Step 3	**end**
	Example:
	`se-10-0-0-0(config)# end`
	`se-10-0-0-0#`
		Exits to privileged EXEC mode.

Step 4	**reload** `se-10-0-0-0# reload`	Restarts the Cisco Unity Express system.

To access the Cisco Unity Express GUI using HTTPS, type the following into the browser:

https://x.x.x.x/

where x.x.x.x represents the Cisco Unity Express IP address.

Enabling HTTPS Access to the Cisco Unity Express GUI (Versions 3.2 and Higher)

Beginning with Cisco Unity Express 3.2, you can configure the system to allow HTTPS access to the Cisco Unity Express GUI without having to reload the system.

To enable HTTPS access to the the Cisco Unity Express GUI, perform the following steps:

Prerequisites

- Cisco Unity Express 3.2 or a later version

SUMMARY STEPS

1. **config t**
2. **crypto key generate**
3. **web session security keylabel** *labelname*
4. end
5. (Optional) **show web session security keylabel**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`crypto key generate label`**
	Example:
	`se-10-0-0-0(config)# crypto key generate`
	`Key generation in progress. Please wait...`
	`The label name for the key is mainkey.ourcompany`
		Generates a self-signed certificate and private key.

Step 3	**`web session security keylabel`** *`labelname`*
	Example:
	`se-10-0-0-0(config)# web session security keylabel mainkey.ourcompany`
		Associates a security key for HTTPS.

Step 4	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 5	**`show web session security keylabel`**
	Example:
	`se-10-0-0-0# show web session security keylabel`
	`Key Label is mainkey.ourcompany`
		(Optional) Displays the security key for HTTPS.

To access the Cisco Unity Express GUI using HTTPS, type the following into the browser:

https://x.x.x.x/

where x.x.x.x represents the Cisco Unity Express IP address.

CHAPTER 16

Backing Up and Restoring Data

Cisco Unity Express backup and restore functions use an FTP server to store and retrieve data. The backup function copies the files from the Cisco Unity Express application to the FTP server and the restore function copies the files from the FTP server to the Cisco Unity Express application. The FTP server can reside anywhere in the network if the backup and restore functions can access it with an IP address or hostname.

We recommend that backups be done regularly to preserve voice-mail messages and configuration data.

Backup and restore commands are available in configuration mode and in offline mode.

- In configuration mode, commands are available to set the following parameters:
  - Number of backup files to keep (the oldest file is deleted).
  - URL of the FTP server where the files will be stored.
- In offline mode, perform the backup or restore procedure. Decide the following:
  - Type of files to be backed up: all files (configuration and data), only configuration files, or only data files. Data files consist of voice-mail messages. Configuration files consist of all other system and application parameters.
  - URL of the FTP server where the files will be stored.

Caution Offline mode terminates all existing voice-mail calls and IMAP and VoiceView Express sessions. No new voice-mail calls are allowed. Calls to auto attendant are allowed. We recommend doing a backup when no calls are active.

This chapter contains the following sections:

- Configuring Scheduled Backup Jobs, page 20

Restrictions

Cisco Unity Express does not support the following backup and restore capabilities:

- Scheduled backup operations in versions prior to Cisco Unity Express 7.1 . The backup and restore procedures begin when the appropriate command is entered. For information about scheduling backups for Cisco Unity Express 7.1 and later , see Configuring Scheduled Backup Jobs, page 20.
- Centralized message storage arrangement. Cisco Unity Express backup files cannot be used or integrated with other message stores.
- Selective backup and restore. Only full backup and restore functions are available. Individual voice-mail messages or other specific data cannot be stored or retrieved.

Backing Up from One Platform and Restoring to Another Platform Type

You can back up your Cisco Unity Express configuration from one hardware platform type and restore it on another type. For example, you can back up your configuration from an NME-CUE and restore it on an AIM2-CUE. The following requirements apply:

- The target platform you are restoring to must have the same licenses enabled as the current platform. For example, if you have 200 mailboxes configured, the same number of mailbox licenses must be enabled on the target platform. If using Cisco Unity Express 7.0 or earlier, the target platform must have the same type of license (CUCM or CUCME) installed.
- The target platform you are restoring to must have the same or greater capacity.
- The number of languages installed should not exceed the limits supported by the target platform.
- The target platform must support the same Cisco Unity Express release. If upgrading to a different software release, see the upgrade procedures in the *Cisco Unity Express installation and Upgrade Guide*.
- The total allocated mail box (mbx) size of the installed platform must be lesser than the maximum capacity of the voice mail of the target platform you are restoring to.

For platform support and capacities, see the *Release Notes for Cisco Unity Express*. See also the *Cisco Unity Express Guide to Hardware Migration and Software Upgrades*.

Setting Backup Parameters

The backup parameters define the FTP server to use for storing Cisco Unity Express backup files and the number of backups that are stored before the system deletes the oldest one.

All Cisco Unity Express backup files are stored on the specified server. You can copy the backup files to other locations or servers, if necessary.

Cisco Unity Express automatically assigns an ID to each successful backup. Use this backup ID to restore the backup.

Prerequisites

- Verify that the backup server is configured.
- Verify that an FTP administrator or other user who can log in to the FTP server has full permission on the FTP server, such as read, write, overwrite, create, and delete permissions for files and directories.

Required Data for This Procedure

- Number of revisions to save before the oldest backup is written over
- FTP server URL
- User ID and password of the FTP server login

SUMMARY STEPS

1. **config t**
2. **backup** {**revisions** *number* | **server url** *ftp-url* **username** *ftp-username* **password** *ftp-password*}
3. **exit**
4. **show backup**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`backup`** {**`revisions`** *`number`* | **`server url`** *`ftp-url`* **`username`** *`ftp-username`* **`password`** *`ftp-password`*}
	Example:
	`se-10-0-0-0(config)#` **`backup server url ftp://main/backups username "admin" password "wxyz"`**
	`se-10-0-0-0(config)#` **`backup server url ftp://172.168.10.10/backups username "admin" password "wxyz"`**
	`se-10-0-0-0(config)#` **`backup revisions 5`**
		Sets the backup parameters.
		• **server url**—The *ftp-url* value is the URL to the network FTP server where the backup files will be stored. The *ftp-username* and *ftp-password* values are the user ID and password for the network FTP server.
		Note The backup server must be configured before the backup revisions can be configured.
		• **revisions**—The number of backup files that will be stored. When this number is reached, the system deletes the oldest stored file.
		In the example, **main** is the hostname of the FTP server and **backups** is the directory where backup files are stored.

	Command or Action	Purpose
Step 3	**exit** **Example:** se-10-0-0-0(config)# exit	Exits configuration mode.
Step 4	**show backup** **Example:** se-10-0-0-0# show backup	Displays the backup server configuration information, including the FTP server URL and the number of revisions.

Examples

The following example configures a backup server and displays the **show backup** output:

```
se-10-0-0-0# config t
se-10-0-0-0#(config)# backup server url ftp://172.16.0.0/backups username admin password
voice
se-10-0-0-0#(config)# backup revisions 10
se-10-0-0-0#(config)# exit
se-10-0-0-0#

se-10-0-0-0# show backup
Server URL:                        ftp://172.16.0.0/backups
User Account on Server:            admin
Number of Backups to Retain:       10
se-10-0-0-0#
```

Backing Up Files

Three types of backup requests are available: data only, configuration only, or all.

- Data—Backs up voice-mail greetings and voice-mail messages.
- Configuration—Backs up system configuration, including recorded names, custom scripts, and custom prompts. Use the **show run** command to display the current running configuration.
- All—Backs up all data and configuration information.

Backups are performed only in offline mode.

Cisco Unity Express automatically numbers and dates the backup files and identifies the revision number in a **backupid** field.

Performing different backup types at various times causes different backup IDs for data backups and configuration backups. For example, the last data backup ID might be 3, and the last configuration backup might be 4. Performing an "all" backup might result in a backup ID of 5 for both data and configuration.

When restoring the files, refer to the backup ID for the backup file that you want to use. Use the **show backup server** command for a list of backup IDs.

Note We recommend that you back up your configuration files whenever changes are made to the system or application files. Data files, which contain voice messages, should be backed up regularly to minimize data loss, such as from a hardware failure.

Caution Offline mode terminates all existing voice-mail calls, and no new voice-mail calls are allowed. Calls to auto attendant are allowed. We recommend doing a backup when telephone subscribers are not active on calls.

SUMMARY STEPS

1. **offline**
2. **backup category** {**all** | **configuration** | **data**}
3. **continue**
4. **show backup history**
5. **show backup server**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`offline`
	Example:
	`se-10-0-0-0# offline`
		Enters offline mode. All active voice-mail calls are terminated.

Step 2	`backup category {all	configuration	data}`
			Example:
			`se-10-0-0-0(offline)# backup category all`
			`se-10-0-0-0(offline)# backup category configuration`
			`se-10-0-0-0(offline)# backup category data`
				Specifies the type of data to be backed up and stored.

Step 3	`continue`
	Example:
	`se-10-0-0-0(offline)# continue`
		Exits offline mode and returns to EXEC mode.

Step 4	`show backup history`
	Example:
	`se-10-0-0-0# show backup history`
		Displays the backup and restore procedures and the success or failure of those attempts.
		Note Beginning with Cisco Unity Express 8.0, use the **show restore history** command to display the restore status.

Step 5	`show backup server`
	Example:
	`se-10-0-0-0# show backup server`
		Displays the backup files available on the backup server, the date of each backup, and the backup file ID.

Examples

The following is sample output from the **show backup history** command for versions 7.1 and earlier:

```
se-10-0-0-0# show backup history

#Start Operation
Category:      Configuration
Backup Server: ftp://10.100.10.215/CUE_backup
Operation:     Backup
Backupid:      2
Restoreid:     -1
Description:   test backup 1
Date:          Sun Jun 13 12:32:48 PDT 1993
Result:        Success
Reason:
#End Operation

#Start Operation
Category:      Data
Backup Server: ftp://10.100.10.215/CUE_backup
Operation:     Backup
Backupid:      2
Restoreid:     -1
Description:   CUE test backup
Date:          Sun Jun 13 12:32:57 PDT 1993
Result:        Success
Reason:
#End Operation

#Start Operation
Category:      Configuration
Backup Server: ftp://10.100.10.215/CUE_backup
Operation:     Restore
Backupid:      2
Restoreid:     1
Description:
Date:          Sun Jun 13 12:37:52 PDT 1993
Result:        Success
Reason:
#End Operation

#Start Operation
Category:      Data
Backup Server: ftp://10.100.10.215/CUE_backup
Operation:     Restore
Backupid:      2
Restoreid:     1
Description:
Date:          Sun Jun 13 12:38:00 PDT 1993
Result:        Success
Reason:
#End Operation
```

The following is sample output from the **show backup history** command for versions 8.0 and later:

```
se-10-0-0-0# show backup history

aaa# show backup history
#Start Operation
Category: Configuration
Backup Server: ftp://192.1.1.31/backups
Operation: Backup
Backupid: 7
Date: Wed Feb 17 23:19:48 EST 2010
Result: Success
Reason:
Version: 8.0.0.1
```

```
#End Operation

#Start Operation
Category: Data
Backup Server: ftp://192.1.1.31/backups
Operation: Backup
Backupid: 7
Date: Wed Feb 17 23:19:48 EST 2010
Result: Success
Reason:
Version: 8.0.0.1
#End Operation

#Start Operation
Category: HistoricalData
Backup Server: ftp://192.1.1.31/backups
Operation: Backup
Backupid: 7
Date: Wed Feb 17 23:19:49 EST 2010
Result: Success
Reason:
Version: 8.0.0.1
#End Operation

#Start Operation
Category: Configuration
Backup Server: ftp://192.1.1.31/backups
Operation: Backup
Backupid: 8
Date: Fri Feb 19 14:36:33 EST 2010
Result: Success
Reason:
Version: 8.0.0.1
#End Operation
```

The following is sample output from the **show backup server** command:

```
se-10-0-0-0# show backup server

Category:       Data
Details of last 5 backups
Backupid:     1
Date:         Tue Jul 22 10:55:52 PDT 2003
Description:

Backupid:     2
Date:         Tue Jul 29 18:06:33 PDT 2003
Description:

Backupid:     3
Date:         Tue Jul 29 19:10:32 PDT 2003
Description:

Category:       Configuration
Details of last 5 backups
Backupid:     1
Date:         Tue Jul 22 10:55:48 PDT 2003
Description:

Backupid:     2
Date:         Tue Jul 29 18:06:27 PDT 2003
Description:
```

```
Backupid:     3
Date:         Tue Jul 29 19:10:29 PDT 2003
Description:

se-10-0-0-0#
```

Restoring Files

After the backup files are created, you can restore them when needed. Restoring is done in offline mode, which terminates all voice-mail active voice-mail calls and IMAP and VoiceView Express sessions. It does not permit new voice-mail calls (auto attendant calls are permitted) or new IMAP and VoiceView Express sessions. You should consider doing the restore when telephone subscribers are least likely to be on the telephone.

Use the **show backup server** command to locate the backup ID of the file that you want to restore.

SUMMARY STEPS

1. **show backup server**
2. **offline**
3. **restore id** *backupid* **category** {**all** | **configuration** | **data**}
4. **show backup history**
5. **reload**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**show backup server** **Example:** `se-10-0-0-0# show backup server`	Lists the data and configuration backup files. Look at the backup ID field for the revision number of the file that you want to restore.
Step 2	**offline** **Example:** `se-10-0-0-0#` **`offline`**	Enters offline mode. All active voice-mail calls are terminated.

Step 3	**restore id** *backupid* **category** {**all** | **configuration** | **data**}
	Example:
	`se-10-0-0-0(offline)#` **`restore id 22 category all`**
	`se-10-0-0-0(offline)#` **`restore id 8 category configuration`**
	`se-10-0-0-0(offline)#` **`restore id 3 category data`**
		Specifies the backup ID *backupid* value and the file type to be restored.

Step 4	Choose one of the following:	

	Command or Action	Purpose
	show backup history **Example:** se-10-0-0-0# **show backup history**	(Cisco Unity Express version 7.2 and earlier) Displays the backup and restore procedures and the success or failure of those attempts.
	show restore history **Example:** se-10-0-0-0# **show restore history**	(Cisco Unity Express version 8.0 and later) Displays the restore procedures and the success or failure of those attempts.
Step 5	**reload** **Example:** se-10-0-0-0(offline)# **reload**	Resets the Cisco Unity Express module so that the restored values take effect.

Example

The following example displays the backup server:

```
se-10-0-0-0# show backup server

Category:       Data
Details of last 5 backups
Backupid:     1
Date:         Tue Jul 22 10:55:52 PDT 2003
Description:

Backupid:     2
Date:         Tue Jul 29 18:06:33 PDT 2003
Description:

Backupid:     3
Date:         Tue Jul 29 19:10:32 PDT 2003
Description:

Category:       Configuration
Details of last 5 backups
Backupid:     1
Date:         Tue Jul 22 10:55:48 PDT 2003
Description:

Backupid:     2
Date:         Tue Jul 29 18:06:27 PDT 2003
Description:


Backupid:     3
Date:         Tue Jul 29 19:10:29 PDT 2003
Description:

se-10-0-0-0#
```

In Cisco Unity Express versions 7.2 and earlier, the restore history is shown using the **show backup history** command. In Cisco Unity Express versions 8.0 and later, the restore history is shown using the **show restore history** command (see example below).

The following example shows the restore history for Cisco Unity Express versions 7.2 and earlier:

```
se-10-0-0-0# show backup history

Start Operation
Category:      Configuration
Backup Server: ftp://10.100.10.215/CUE_backup
Operation:     Backup
Backupid:      1
Restoreid:     -1
Description:   test backup 1
Date:          Sun Jun 13 12:23:38 PDT 1993
Result:        Failure
Reason:        Script execution failed: /bin/BR_VMConfg_backup.sh: returnvalue:1
 ; Server Url:ftp://10.100.10.215/CUE_backup: returnvalue:9 Unable to authenticate
#End Operation

#Start Operation
Category:      Data
Backup Server: ftp://10.100.10.215/CUE_backup
Operation:     Backup
Backupid:      1
Restoreid:     -1
Description:   test backup 1
Date:          Sun Jun 13 12:23:44 PDT 1993
Result:        Failure
Reason:        Script execution failed: /bin/BR_VMData_backup.sh: returnvalue:1
Voicemail Backup failed; Server Url:ftp://10.100.10.215/CUE_backup: returnvalue:9
 Unable to authenticate
#End Operation

#Start Operation
Category:      Configuration
Backup Server: ftp://10.100.10.215/CUE_backup
Operation:     Backup
Backupid:      2
Restoreid:     -1
Description:   CUE test backup
Date:          Sun Jun 13 12:32:48 PDT 1993
Result:        Success
Reason:
#End Operation

#Start Operation
Category:      Data
Backup Server: ftp://10.100.10.215/CUE_backup
Operation:     Backup
Backupid:      2
Restoreid:     -1
Description:   CUE test backup
Date:          Sun Jun 13 12:32:57 PDT 1993
Result:        Success
Reason:
#End Operation
```

The following example shows the restore history for Cisco Unity Express versions 8.0 and later:

```
se-10-0-0-0# show restore history


#Start Operation
Category:      Configuration
Backup Server: ftp://10.100.10.215/CUE_backup
Operation:     Restore
Backupid:      129
Restoreid:     15
```

```
Description:   CUE test backup
Date:          Sun Jun 13 12:32:48 PDT 1993
Result:        Success
Reason:
Version: 8.0.0.1
#End Operation
```

Copying Configurations

The following Cisco Unity Express EXEC commands are available to copy the startup configuration and running configuration to and from Flash memory, the network FTP server, and the network TFTP server.

Copying from Flash Memory to Another Location

Starting in Cisco Unity Express EXEC mode, use the following command to copy the startup configuration in Flash memory to another location:

copy startup-config {**ftp:** *user-id***:***password@ftp-server-address***/**[*directory*] |
tftp:*tftp-server-address*} *filename*

Keyword or Argument	Description
ftp: *user-id*:*password@*	User ID and password for the FTP server. Include the colon (:) and the at sign (@) in your entry.
ftp-server-address	IP address of the FTP server.
/directory	(Optional) Directory on the TFTP server where the copied file will reside. If you use it, precede the name with the forward slash (/).
tftp:*tftp-server-address*	IP address of the TFTP server.
filename	Name of the destination file that will contain the copied startup configuration.

This command is interactive and prompts you for the information. You cannot enter the parameters in one line. The following examples illustrate this process.

In this example, the startup configuration is copied to the FTP server, which requires a user ID and password to transfer files. The IP address of the FTP server is 172.16.231.193. The startup configuration file is saved on the FTP server with the filename start.

```
se-10-0-0-0# copy startup-config ftp
Address or name of remote host? admin:voice@172.16.231.193
Source filename? start
```

The following example shows the startup configuration copied to the TFTP server, which does not require a user ID and password. The IP address of the TFTP server is 172.16.231.190. The startup configuration is saved in the TFTP directory configs as filename temp_start.

```
se-10-0-0-0# copy startup-config tftp
Address or name of remote host? 172.16.231.190/configs
Source filename? temp_start
```

Copying from the Network FTP Server to Another Location

Starting in Cisco Unity Express EXEC mode, use the following command to copy the network FTP server configuration to another location:

copy ftp: {**running-config** | **startup-config**} *user-id***:***password@ftp-server-address***/**[*directory*] *filename*

Keyword or Argument	Description
running-config	Active configuration in Flash memory.
startup-config	Startup configuration in Flash memory.
*user-id***:***password@*	User ID and password for the FTP server. Include the colon (:) and the at sign (@) in your entry.
ftp-server-address	IP address of the FTP server.
/directory	(Optional) Directory name for retrieving the file. If you use it, precede the name with the forward slash (/).
filename	Name of the source file to be copied.

This command is interactive and prompts you for the information. You cannot enter the parameters in one line. The following example illustrates this process.

In this example, the FTP server requires a user ID and password. The IP address of the FTP server is 10.3.61.16. The file start in the FTP server configs directory is copied to the startup configuration.

```
se-10-0-0-0# copy ftp: startup-config
!!!WARNING!!! This operation will overwrite your startup configuration.
Do you wish to continue[y]? y
Address or name or remote host? admin:voice@10.3.61.16/configs
Source filename? start
```

Copying the Flash Running Configuration to Another Location

Starting in Cisco Unity Express EXEC mode, use the following command to copy the running configuration in Flash memory to another location:

copy running-config {**ftp:** *user-id***:***password@ftp-server-address***/**[*directory*] | **startup-config** | **tftp:***tftp-server-address*} *filename*

Keyword or Argument	Description
ftp: *user-id***:***password@*	User ID and password for the FTP server. Include the colon (:) and the at sign (@) in your entry.
ftp-server-address	IP address of the FTP server.
/directory	(Optional) Directory on the FTP server where the copied file will reside. If you use it, precede the name with the forward slash (/).
startup-config	Startup configuration in Flash memory.
tftp:*tftp-server-address*	IP address of the TFTP server.
filename	Name of the destination file that will contain the copied running configuration.

```
When you copy the running configuration to the startup configuration, enter the command on
one line.
```

When you copy to the FTP or TFTP server, this command becomes interactive and prompts you for the information. You cannot enter the parameters in one line. The following example illustrates this process.

In the following example, the running configuration is copied to the FTP server, which requires a user ID and password. The IP address of the FTP server is 172.16.231.193. The running configuration is copied to the configs directory as file saved_start.

```
se-10-0-0-0# copy running-config ftp:
Address or name of remote host? admin:voice@172.16.231.193/configs
Source filename? saved_start
```

In the following example, the running configuration is copied to the startup configuration as file start. In this instance, enter the command on a single line.

```
se-10-0-0-0# copy running-config startup-config start
```

Copying the Network TFTP Configuration to Another Location

Starting in Cisco Unity Express EXEC mode, use the following command to copy the network TFTP configuration to another location:

copy tftp: {**running-config** | **startup-config**} *tftp-server-address*/[*directory*] *filename*

Keyword or Argument	Description
running-config	Active configuration in Flash memory.
startup-config	Startup configuration in Flash memory.
tftp-server-address	IP address of the TFTP server.
/*directory*	(Optional) Directory on the TFTP server where the copied file will reside. If you use it, precede the name with the forward slash (/).
filename	Name of the source file to be copied.

This command is interactive and prompts you for the information. You cannot enter the parameters in one line. The following example illustrates this process.

In this example, the TFTP server has IP address 10.3.61.16. The file start in directory configs on the TFTP server is copied to the startup configuration.

```
se-10-0-0-0# copy tftp: startup-config
!!!WARNING!!! This operation will overwrite your startup configuration.
Do you wish to continue[y]? y
Address or name of remote host? 10.3.61.16/configs
Source filename? start
```

Restoring Factory Default Values

Cisco Unity Express provides a command to restore the factory default values for the entire system. Restoring the system to the factory defaults erases the current configuration. This function is available in offline mode.

Caution This operation is irreversible. All data and configuration files are erased. Use this feature with caution. We recommend that you do a full system backup before proceeding with this feature.

When the system is clean, the administrator sees a message that the system will reload, and the system begins to reload. When the reload is complete, the system prompts the administrator to go through the postinstallation process.

When logging in to the graphical user interface (GUI), the administrator has the option to run the initialization wizard.

Perform the following steps to reset the system to Cisco Unity Express factory default values.

Step 1 se-10-0-0-0# **offline**

This command puts the system into offline mode.

Step 2 (offline)# **restore factory default**

```
This operation will cause all the configuration and data on the system to be erased. This
operation is not reversible. Do you wish to continue? (n)
```

Step 3 Do one of the following:

- Enter **n** if want to retain the system configuration and data.

  The operation is cancelled, but the system remains in offline mode. To return to online mode, enter **continue**.

- Enter **y** if you want to erase the system configuration and data.

  When the system is clean, a message appears indicating that the system will start to reload. When the reload is complete, a prompt appears to start the postinstallation process.

Backup and Restore Using SFTP

This section discusses the following topics:

- Overview, page 14
- Configuring Backup and Restore Using SFTP, page 15

Overview

Starting in release 3.0, you can transfer files from any Cisco Unity Express application to and from the backup server using Secure File Transfer Protocol (SFTP). SFTP provides data integrity and confidentiality that is not provided by FTP.

Because SFTP is based on Secure Shell tunnel version 2 (SSHv2), only SSHv2 servers are supported for this feature.

To run backup and restore over SFTP, you must configure the URL of the backup server in the form of sftp://*hostname*/*dir*, and also the username and password to login to the server. The backup server must have an SSH daemon running with the SFTP subsystem enabled. The SSH protocol allows various user authentication schemes. In Version 3.2, however, only password authentication is supported.

Configuring Backup and Restore Using SFTP

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

There is no data required.

SUMMARY STEPS

1. **config t**
2. **backup** {**revisions** *number* | **server url** *sftp-url* **username** *sftp-username* **password** *sftp-password*}
3. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.

Step 2	**backup** {**revisions** *number* | **server url** *sftp-url* **username** *sftp-username* **password** *sftp-password*}
	Example:
	`se-10-0-0-0(config)# backup server url sftp://branch/vmbackups username admin password mainserver`
		Performs a backup to the specified SFTP or FTP server. To use SFTP, the URL must be of the form sftp://*hostname*/*directory*.

Step 3	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Backup Server Authentication Using a SSH Host Key

This section discusses the following topics:

- Overview, page 14
- Configuring Backup Server Authentication Without Using the SSH Host Key, page 16
- Configuring Backup Server Authentication Using the SSH Host Key, page 17

Overview

Starting in release 3.0, you can authenticate the backup server using the SSH protocol before starting a backup/restore operation. The SSH protocol uses public key cryptography for server authentication.

This feature provides two methods of authenticating a server:

- Establishing a secure connection based only on the URL of a trusted backup server.
- Obtaining the fingerprint of the backup server and using it to establish a secure connection. This fingerprint is also known as the host key or private key.

The first method is easier than the second method, but it is less secure because it does not depend on you knowing the backup server's private host key. However, if you know the URL of a trusted backup server, it is generally safe. In this case, the backup server securely provides the client with its private host key.

In both cases, when server authentication is enabled, the system validates the SSH server's private host key by comparing the fingerprint of the key received from the server with a preconfigured string. If the two fingerprints do not match, the SSH handshake fails, and the backup/restore operation does not occur.

You cannot use the GUI to configure this feature; you must use the CLI.

Both methods are explained in the following sections.

Configuring Backup Server Authentication Without Using the SSH Host Key

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

To enable SSH authentication of a backup server without knowing the server's fingerprint (private host key), you must know the URL of a trusted backup server.

SUMMARY STEPS

1. **config t**
2. **backup server url sftp://***url*
3. **backup server authenticate**
4. **end**
5. **show security ssh knowhost**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**backup server url sftp://***url* **Example:** `se-10-0-0-0(config)# backup server url sftp://company.com/server22`	Establishes an initial connection with the backup server.
Step 3	**backup server authenticate** **Example:** `se-10-0-0-0(config)# backup server authenticate`	Retrieves the fingerprint of the backup server's host key and establishes a secure SSH connection.

Step 4	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Step 5	**show security ssh knownhost** **Example:** `se-10-0-0-0(config)# show security ssh knownhost`	Displays a list of configured SSH servers and their fingerprints.

Configuring Backup Server Authentication Using the SSH Host Key

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

To use a backup server's fingerprint (private host key) to enable SSH authentication, you must first retrieve the fingerprint "out-of-band" by running the **ssh-keygen** routine on the backup server. This routine is included in the OpenSSH package. The following example shows the command and its output:

ssh-keygen -l -f /etc/ssh/ssh_host_dsa_key.pub

1024 4d:5c:be:1d:93:7b:7c:da:56:83:e0:02:ba:ee:37:c1 /etc/ssh/ssh_host_dsa_key.pub

SUMMARY STEPS

1. **config t**
2. **security ssh knownhost** *host* **{ssh-rsa | ssh-dsa}** *fingerprint-string*
3. **end**

4. **show security ssh knowhost**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`security ssh knownhost`** *`host`* **`{ssh-rsa | ssh-dsa}`** *`fingerprint-string`*
	Example:
	`se-10-0-0-0(config)# security ssh knownhost server.cisco.com ssh-rsa a5:3a:12:6d:e9:48:a3:34:be:8f:ee:50:30:e5:e6:c3`
		Configures the MD5 fingerprint of the SSH server's host key using the following arguments and keywords:
		host — Fully qualified hostname or IP address of the SSH server.
		ssh-rsa — RSA algorithm was used to create this fingerprint for a SSH server's host key.
		ssh-dsa — DSA algorithm was used to create this fingerprint for a SSH server's host key.
		fingerprint-string — MD5 fingerprint string.

Step 3	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Step 4	**`show security ssh knownhost`**
	Example:
	`se-10-0-0-0(config)# show security ssh knownhost`
		Displays a list of configured SSH servers and their fingerprints.

Encrypting and Signing of Backup Content on the Server

This section discusses the following topics:

- Overview, page 18
- Configuring the Encryption and Signing of Backup Content on the Server, page 19

Overview

Starting in release 3.0, you can protect backed up configuration and data files using signing and encryption before the files are transferred to the backup server.

To enable this feature, you must configure a master key, from which the encryption and signing key (known as the session key) are derived. The backup files are encrypted and signed before they are sent to the backup server. When you restore the files, the master key is used to validate the integrity of the files and decrypt them accordingly. You can also restore the backup files to any other machine running

Cisco Unity Express 3.1 or later versions, if you configure the same master key before you begin the restore process. To make it easier to automate a scheduled backup, the master key is stored securely on the hosting device. It is not included in the backup content.

During the restore process, if the system detects that backup content has been tampered with, the restore process aborts. The system also halts and waits for the administrator to take some action, such as restoring using a different revision.

For backward compatibility, you can allow unsigned backup files to be restored if the risk is acceptable.

Configuring the Encryption and Signing of Backup Content on the Server

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

There is no data required.

SUMMARY STEPS

1. **config t**
2. **backup security key generate**
3. **backup security protected**
4. **backup security enforced**
5. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`backup security key generate`**
	Example:
	`se-10-0-0-0(config)# backup security key generate`
		Creates the master key used for encrypting and signing the backup files.

Step 3	**`backup security protected`**
	Example:
	`se-10-0-0-0(config)# backup security protected`
		Enables secure mode for backups. In secure mode, all backup files are protected using encryption and a signature.

	Command or Action	Purpose
Step 4	**backup security enforced** **Example:** `se-10-0-0-0(config)# backup security enforced`	Specifies that only protected and untampered backup files are restored.

Step 5	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Encrypting PINs in Backup Files

Before release 3.0, PINs were stored as clear text in LDAP and were therefore visible in the backup file. This is because user PINs are stored in LDAP, which is backed up in LDIF format. This feature applies SHA-1 hash encryption to PINs before storing them in the LDAP database. As a result, when a user logs in to voice mail, the PIN they submit is hashed and compared to the PIN attribute retrieved from LDAP directory.

To migrate from an earlier version, you must convert from a clear PIN to a hashed PIN in the LDAP directory. This conversion is typically done right after a system upgrade from an earlier version or after a restore operation from an old backup. At his point, the clear PIN is removed from the database and replaced with the encrypted PIN.

Because encryption using SHA-1 is not reversible, after the conversion is complete, you cannot disable or turn off this feature to restore the encrypted PIN to its clear form.

Note This feature does not require any configuration using the GUI or CLI.

Configuring Scheduled Backup Jobs

Beginning in release 7.1, you can configure one-time or recurring backup jobs.

For recurring backup jobs, you can configure the jobs to repeat:

- Every N days at a specific time
- Every N weeks on a specific day and time
- Every N months on a specific day of the month and time
- Every N years on a specific month

You can configure up to five repetitive scheduled backup jobs and five one-time scheduled backup jobs.

Whenever a backup job (or any scheduled activity) is started and in progress, any other activities that are scheduled to start at this time, are put in queue to wait for the first activity to finish. The maximum size of the queue is nine activities.

You cannot delete individual instances of a recurring scheduled backup schedule; you can only delete the entire series of backup jobs. However, you can enable forever a given scheduled action by configuring start and end dates for the action to specify when the action is active. You can also suspend a scheduled action indefinitely by not specifying an expiration date for the action.

Immediate backup requests are always given precedence over scheduled backup jobs. If the scheduled backup is configured to start at the same time as an immediate backup, the scheduled backup job is queued and the system waits for the immediate backup to finish before it attempts to start the scheduled backup job.

Prerequisites

Cisco Unity Express 7.1 or a later version

SUMMARY STEPS

1. **backup schedul**e [*name*]
2. repeat every **{***number* **days at** *time* |*number* **weeks on** *day* | *number* **months on day** *date* | *number* **years on month** *month*} at *time*

Note Instead of the **repeat every** command, you can optionally use one of the following commands:

- **repeat once at** *time*
- **repeat daily at** *time*
- **repeat monthly on day** *date* **at** *time*
- **repeat weekly on** *day* **at** *time*
- **repeat yearly on month** *month* **at** *time*

3. start-date *date*
4. stop-date *date*
5. **disabled from** *date* **to** *date*
6. **backup categories** [**all**] [**configuration**] [**data**] [**HistoricalData**] [**TimeCardView**]
7. **end**
8. **show backup schedules** or **show schedules**
9. show backup schedule detail job *job-name* or show schedule detail job *job-name*

DETAILED STEPS

	Command or Action	Purpose
Step 1	**backup schedule** [*name*] **Example:** se-10-0-0-0# backup schedule 22	Enters backup schedule configuration submode to enable you to configure a scheduled backup job.
Step 2	**repeat every** {*number* **days** |*number* **weeks on** *day* | *number* **months on day** *date* | *number* **years on month** *month*} **at time** *time* **Example:** se-10-0-0-0(backup-schedule)# repeat every 2 days at time 10:00	Specifies how often a recurring scheduled backup occurs. To configure a one-time backup job, use the **repeat once** command. You can also optionally use one of the other **repeat** commands listed in the previous note.
Step 3	**start-date** *date* **Example:** se-10-0-0-0(backup-schedule)# start-date 05/30/2009	Specifies the start date for the recurring scheduled backup to occur.
Step 4	**stop-date** *date* **Example:** se-10-0-0-0(backup-schedule)# stop-date 10/20/2009	Specifies the stop date for the recurring scheduled backup to occur.
Step 5	**disabled from** *date* **to** *date* **Example:** se-10-0-0-0(backup-schedule)# disabled from 10/02/2009 to 10/06/2009	Specifies a time period that the recurring scheduled backup jobs are disabled.
Step 6	**backup categories** [**all**] [**configuration**] [**data**] [**HistoricalData**] [**TimeCardView**] **Example:** se-10-0-0-0(backup-schedule)# **backup categories configuration**	Specifies which categories of data to backup.
Step 7	**end** **Example:** se-10-0-0-0(backup-schedule)# end	Exits to privileged EXEC mode.
Step 8	**show schedules** or **show backup schedules** **Example:** se-10-0-0-0# show schedules	(Optional) Displays all recurring scheduled events or all scheduled backup jobs configured on the local system.
Step 9	**show schedule detail job** *job-name* or **show backup schedule detail job** *job-name* **Example:** se-10-0-0-0# show schedule detail job job-22	(Optional) Displays the details of the specified recurring scheduled event or backup job.

Examples

The following is sample output from the **show backup schedules** command:

```
se-10-0-0-0# show backup schedules

Name         Schedule                Next Run       Description   Categories
A22          NOT SET                 NEVER
backup1000   Every 1 days at 12:34   Jun 25, 2002 12:34           Data
Total: 2
```

The following is sample output from the **show schedules** command:

```
se-10-0-0-0# show schedules

Name         Schedule                Next Run       Description   Categories
A22          NOT SET                 NEVER
backup1000   Every 1 days at 12:34   Jun 25, 2002 12:34           Data
Total: 2
```

The following is sample output from the **show backup schedule detail job** command:

```
se-10-0-0-0# show backup schedule detail job job-8

Name          job-8
Description   main backup
Categories   TimeCardView Configuration Data HistoricalData
Schedule      Daily at 06:00
Last Run      Jan 1, 2009 at 6:00
Last Result   Success
Next Run      Jan 2, 2009 at 6:00
Active        from Jan 01, 2000 until Dec 31, 2009
```

The following is sample output from the **show schedule detail job** command:

```
se-10-0-0-0# show schedule detail job job-8

Job Name     job-8
Application backup
Description main backup
Schedule    Daily at 06:00
Last Run    5 hours 59 seconds ago
Next Run    in 18 hours 1 seconds
Active          from Jun 25, 2002 until INDEFINITE
```

Disabling or Reenabling All Scheduled Backups

Beginning in Cisco Unity Express 8.0, you can disable or reenable all scheduled backups with a single command.

Prerequisites

Cisco Unity Express 8.0 or a later version

SUMMARY STEPS

1. **backup schedule disable all from** *date* **to** *date*
2. **no backup schedule disable all**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`backup schedule disable all from date to date`
	Example:
	`se-10-0-0-0# backup schedule disable all from 07/06/2010 to 07/08/2010`
		Disables all scheduled backups for a specified period. Dates are entered in MM/DD/YYYY format.

Step 2	`no backup schedule disable all`	Reenables all the scheduled backups that were disabled with the previous command.

Configuring Scheduled Backup Notification

Beginning in Cisco Unity Express 8.0, you can configure the system to notify specific users about the status of a scheduled backup.

Prerequisites

Cisco Unity Express 8.0 or a later version

SUMMARY STEPS

1. **backup schedul**e [**name** *name*]
2. **backup notification on** {**success** | **failure** | **always**} {**voicemail** *user_id* | **email** *email_address* | **epage** *epage_address*}
3. **end**
4. **show backup schedule detail job** *job-name*

DETAILED STEPS

	Command or Action	Purpose
Step 1	**backup schedule** [**name** *name*] **Example:** `se-10-0-0-0# backup schedule name 22`	Enters backup schedule configuration mode to enable you to configure a scheduled backup job.

Step 2	**backup notification on** {**success** | **failure** | **always**} {**voicemail** *user_id* | **email** *email_address* | **epage** *epage_address*}
	Example:
	`se-10-0-0-0(backup schedule)# backup notification on always email aaa@cisco.com`
	`se-10-0-0-0(backup schedule)# backup notification on failure email bbb@cisco.com`
	`se-10-0-0-0(backup schedule)# backup notification always pager email2@com`
	`se-10-0-0-0(backup schedule)# backup notification always voicemail admin`
		Configures the system to notify users about the scheduled backup status. You can enter this command multiple times to configure different notification targets. You can configure up to three notification targets for each target type: voicemail, email, or epage.

Step 3	**end**
	Example:
	`se-10-0-0-0(backup-schedule)# end`
		Exits to privileged EXEC mode.

Step 4	**show backup schedule detail job** *job-name* **Example:** `se-10-0-0-0# show backup schedule detail job job-22`	(Optional) Displays the details of the specified recurring scheduled backup job.

Language Support

This chapter describes the multiple language support feature and includes the following sections:

Language Settings

Cisco Unity Express provides multiple language support. You can install and use more than one language simultaneously onto a single platform. See the *Release Notes for Cisco Unity Express* for the number of languages supported on the hardware module.

When you have multiple languages installed on a platform, you can select which language to use for each of the following functions:

- Interactive Voice Response (IVR)
- Autoattendant Application
- Voice mail
- Administration Via Telephony (AVT)
- VoiceView
- Message notification
- VoiceXML Web Applications

The language settings for each of these functions are explained in the following sections.

AutoAttendant and IVR

For the autoattendant, there are two ways to specify which language is used when playing prompts. These are the language settings that you can specify, listed in order of priority that they take effect:

1. Locale for trigger pilot numbers
2. Default preferred language for the system

The setting for triggers override the default system language. If you do not set the Trigger Locale language or set it to the system default instead of a specific language, the system default preferred language is used.

For more information about setting the language for triggers, see the "Managing Triggers" section on page 38. For more information about setting the default preferred language for the system, see the "Configuring System-Wide Voice-Mail Parameters" section on page 20.

For custom autoattendant and custom IVR workflow scripts, you can select the language used for playing prompts by using the following procedure in the script editor:

1. Create a variable of type Locale and use it to set the language
2. Set the language attribute of the Set Contact Info step with the variable created in step 1.

For more information about setting the language for triggers, see the *Cisco Unity Express Guide to Writing and Editing Script*s.

Voice Mail

The voice mail application has three ways that you can specify which language is used when a caller leaves a voice mail. These are the language settings that you can specify, listed in order of priority that they take effect:

1. Voice mail default
2. Locale for trigger pilot numbers
3. Default preferred language for the system

For a voice mail subscriber, you can specify the language of the login prompt (before PIN authentication). These are the language settings that you can specify, listed in order of priority that they take effect:

1. Voice mail default
2. Locale for trigger pilot numbers
3. Default preferred language for the system

For a voice mail subscriber, you can specify the language used after login into the mailbox (after PIN authentication). These are the language settings that you can specify, listed in order of priority that they take effect:

1. User preferred language
2. Default voice mail language
3. Locale for trigger pilot numbers
4. Default preferred language for the system

For more information about setting the user preferred language, see the "Adding and Modifying a User" section on page 1. For more information about setting the default voice mail language, see the "Configuring System-Wide Voice-Mail Parameters" section on page 20. For more information about setting the language for triggers, see the "Managing Triggers" section on page 38. For more information about setting the default preferred language for the system, see the "Configuring System-Wide Voice-Mail Parameters" section on page 20.

Administration Via Telephony

For Administration Via Telephony (AVT), you can specify the language used in the login prompt (before user PIN authentication). These are the language settings that you can specify, listed in order of priority that they take effect:

1. Locale for trigger pilot numbers
2. Default preferred language for the system

After the AVT login prompt and user PIN authentication, if more than one language is installed in the platform, a menu list of installed languages is played so that the user can select which language to use. If only one language is installed, no menu list will be provided to the user to select a language. The language that is installed will be the language that the user will be performing administration on.

The configured preferred language for the user has no effect on which language the AVT selects to operate in.

For more information about setting the language for triggers, see the "Managing Triggers" section on page 38. For more information about setting the default preferred language for the system, see the "Configuring System-Wide Voice-Mail Parameters" section on page 20.

VoiceView

When a voice mail subscriber retrieves voice mail using VoiceView, the language used by VoiceView to display the menus in the phone depends solely on the phone configured language. It does depend on any language priority selection set for the voice mail TUI interface. The only exception is when a voice mail subscriber is using VoiceView to listen to the default user greeting. In this case, the following priority is be used.

1. User preferred language
2. Default voice mail language
3. Default preferred language for the system

All languages are preinstalled for VoiceView independent of the languages installed during the software online or offline install. For example, if a network module has en_US and es_ES language installed, the phone can still be configured for da_DK for VoiceView. This is the same behavior as previous versions.

For more information about setting the user preferred language, see the "Adding and Modifying a User" section on page 1. For more information about setting the default voice mail language, see the "Configuring System-Wide Voice-Mail Parameters" section on page 20. For more information about setting the language for triggers, see the "Managing Triggers" section on page 38. For more information about setting the default preferred language for the system, see the "Configuring System-Wide Voice-Mail Parameters" section on page 20.

Message Notification

You can specify the language for the functions described in the following sections:

- Subscriber Message Notification, page 4
- Cascaded Message Notification, page 4
- Nonsubscriber Message Notification, page 4

Subscriber Message Notification

For Subscriber Message Notification, these are the language settings that you can specify, listed in order of priority that they take effect:

1. User preferred language
2. Default voice mail language
3. Locale for trigger pilot numbers
4. Default preferred language for the system

Cascaded Message Notification

For Cascaded Subscriber Message Notification, these are the language settings that you can specify, listed in order of priority that they take effect:

1. (Cascaded) User Language
2. Default voice mail language
3. Locale for trigger pilot numbers
4. Default preferred language for the system

Nonsubscriber Message Notification

For Nonsubscriber Message Notification, these are the language settings that you can specify, listed in order of priority that they take effect:

1. Default voice mail language
2. Locale for trigger pilot numbers
3. Default preferred language for the system

For more information about setting the user preferred language, see the "Adding and Modifying a User" section on page 1. For more information about setting the default voice mail language, see the "Configuring System-Wide Voice-Mail Parameters" section on page 20. For more information about setting the language for triggers, see the "Managing Triggers" section on page 38. For more information about setting the default preferred language for the system, see the "Configuring System-Wide Voice-Mail Parameters" section on page 20.

VoiceXML Web Applications

For custom VoiceXML web applications, you can specify the language of the prompt by setting the VoiceXML built-in *lang* variable.

The following example shows how to set a language in a VoiceXML script. In this example, the VoiceXML script does the following:

- Sets the document-level language to British English
- Plays the user prompt welcome message in British English
- Sets the prompt-level language to US English
- Plays the user prompt welcome message in US English
- Sets the prompt-level language to British English

- Plays the system prompt goodbye message in British English

```
<?xml version="1.0"?>
<vxml version="2.0" xmlns="http://www.w3.org/2001/vxml" xml:lang="En-GB">
    <form>
        <block>
           <prompt>
                <audio expr="'userprompt=AAWelcome.wav'"/>
           </prompt>
           <prompt xml:lang="En-US">
                <audio expr="'userprompt=AAWelcome.wav'"/>
           </prompt>
           <prompt xml:lang="En-GB">
                <audio expr="'systemprompt=goodbye.wav'"/>
           </prompt>
        </block>
    </form>
</vxml>
```

Uploading and Downloading Custom Prompts and Documents

You can upload and download prompts in the same manner as in previous releases. The upload and download prompt commands allow the selection of which language the user w ill use when performing the upload and download.

The uploading and downloading of documents is implemented in the same manner as the uploading and downloading of prompts.

Installation Considerations

The maximum number of languages that can be installed is enforced according to the platform type.

Backup and Restore Considerations

To backup and restore language prompts and documents, use the existing backup and restore facility. Only the custom prompts and custom documents for each language are backed up and restored. If you attempt to restore a backup when the language for that backup is not installed, the custom prompts and document for that missing language are NOT restored.

CHAPTER 18

Configuring Advanced Voice Mail

This chapter contains the following procedures for configuring advanced Cisco Unity Express voice mail features:

- Configuring IMAP, page 1 (optional)
- Configuring Live Record, page 9 (optional)
- Configuring Live Reply, page 13 (optional)
- Configuring the Delivery of Future Messages, page 21 (optional)
- Configuring Nonsubscriber Message Delivery, page 23 (optional)
- Configuring Broadcast Messages, page 26 (optional)
- Configuring Restriction Tables, page 32 (optional)

Configuring IMAP

This section discusses the following topics:

- Overview, page 1
- IMAP Server, page 2
- E-mail Client Considerations, page 2
- Configuring Integrated Messaging, page 5
- Displaying IMAP Sessions, page 8

Overview

Integrated messaging on Cisco Unity Express is the convergence feature for voicemail and e-mail systems. It allows subscribers to have an integrated view of their e-mails and voice-mail messages from a single e-mail client using IMAP Version 4 rev1.

Subscribers can delete voice-mail messages or mark them as read or unread in a manner similar to e-mail messages.

The voice-mail messages are downloaded as attachments to e-mail messages. Subscribers can access the voice-mail messages over the network or can download them selectively. If the messages are downloaded, subscribers can play them locally using standard media players without requiring a connection to Cisco Unity Express.

Accessing voice-mail messages from general delivery mailboxes (GDMs) is not supported.

To access this feature, subscribers must be configured with the vm-imap privilege.

Note The Cisco Unity Express module cannot be used as an SMTP server for sending and receiving e-mails.

IMAP Server

The IMAP server must be enabled on Cisco Unity Express before the server allows e-mail clients to connect. The feature can be enabled in the following modes:

- Non-SSL

  Non-SSL is the least secure mode.
- SSL
- Mixed

  This mode allows both SSL and non-SSL connections.

If you change the connection mode on the IMAP server, verify the configuration on the clients, which may need to be changed to match the IMAP server configuration.

The maximum number of simultaneous IMAP connections is determined by the module type. See the *Release Notes for Cisco Unity Express* for more information.

Any changes to the IMAP configuration require a restart of the IMAP server. You can restart the IMAP server using the **enable (IMAP)** command-line interface (CLI) command or a graphical-user interface (GUI) option.

E-mail Client Considerations

Table 18-1 lists the IMAP e-mail clients that are supported.

Table 18-1 IMAP Client Support

	Cisco Unity Express Release:							
IMAP Client	**3.0**	**3.1**	**3.2**	**7.0**	**7.1**	**8.0/7.2**	**8.5/7.3**	**8.6/7.4**
Iphone third party clients						X	X	X
Cisco Mobile 8.0 (supported on Iphone)								X
Cisco Unified Personal Communicator (CUPC) 8.5[1]								X

Table 18-1 IMAP Client Support (continued)

	Cisco Unity Express Release:							
IMAP Client	**3.0**	**3.1**	**3.2**	**7.0**	**7.1**	**8.0/7.2**	**8.5/7.3**	**8.6/7.4**
Cisco Unified Communications Integration™ for Microsoft Office Communicator 8.0[1]								X
Microsoft Outlook 2010								X
Microsoft Outlook 2007						X	X	X
Microsoft Outlook 2003	X	X	X	X	X	X	X	X
Microsoft Outlook 2002	X	X	X	X	X	X	X	X
Microsoft Outlook 2000	X	X	X	X	X	X	X	
Microsoft Outlook Express 6.0	X	X	X	X	X	X	X	
Microsoft Entourage 2008								X
Microsoft Entourage 2004			X	X	X	X	X	
Microsoft Windows Live Mail 12.0								X
IBM Lotus Notes 8.5								X
IBM Lotus Notes 8.0								X
IBM Lotus Notes 7.0								X
IBM Lotus Notes 6.5	X	X	X	X	X	X	X	
IBM Lotus Notes 6	X	X	X	X	X	X	X	

[1] This client is based on Client Services Framework, but can access Cisco Unity Express voicemail using the IMAP interface. See the "Support for Client Services Framework (CSF)-Based Clients" section on page 8.

Note See the client documentation for their procedures for establishing connections to an IMAP server.

To connect to Cisco Unity Express, configure the e-mail client to accept the user ID and password of the Cisco Unity Express subscriber.

Note Subscribers cannot use the numeric PIN to log in to Cisco Unity Express through the e-mail client.

If this feature is enabled in SSL mode only, verify that the e-mail client is configured to use SSL connections to the IMAP server.

The same subscriber can connect to Cisco Unity Express from one or more e-mail clients using one or more connection types (SSL or non-SSL). Each session counts against the maximum number of connections allowed to the IMAP server.

Subscribers cannot retrieve the following types of messages from their personal mailboxes:

- Broadcast messages
- Private messages

The voice-mail messages are downloaded as .wav attachments to the Inbox folder of the e-mail clients.

If a subscriber receives a new message or saves a voice-mail message in the Inbox folder, the Cisco Unity Express retains the message in its database. If mandatory message expiry is enabled on Cisco Unity Express, the message is subject to the expiry timer.

If a subscriber moves a voice-mail message from the Inbox folder to another folder on the e-mail client, Cisco Unity Express deletes the message from its database. Mandatory message expiry would not affect that message.

Note Mandatory message expiry is not enforced on e-mail clients but is enforced on messages in the Cisco Unity Express database.

Cisco Unity Express supports the following operations on the e-mail clients:

- Mark Read/Unread

  The Mark Read operation on the e-mail client is equivalent to Message Save on the voice-mail system. Similarly, the Mark Unread on the e-mail client is equivalent to the Mark New on the voice-mail system.

- Delete/Undelete
- Expunge (Purge)

Errors displayed on the e-mail clients are dependent on the client implementation. See the client documentation for more information.

The protocols supported determine the port that the IMAP client uses to connect to Cisco Unity Express. Table 18-2 lists the supported ports for Cisco Unity Express 8.5 and earlier. Table 18-3 lists the supported ports for Cisco Unity Express 8.6 and later.

Table 18-2 IMAP Protocols and Ports Supported (Cisco Unity Express 8.5 and Earlier)

IMAP server session security command setting	Port 143	Port 993
none	Supported	Not supported
mixed	Supported	Supported
ssl	Supported	Supported

Table 18-3 IMAP Protocols and Ports Supported (Cisco Unity Express 8.6 and Later)

IMAP server session security command setting	Port 143	Port 993	Port 7993[1]
none	Supported	Not supported	Not supported
mixed	Supported	Supported	Supported (STARTTLS/ LOGIN DISABLED[2])
ssl	Supported (STARTTLS/ LOGIN DISABLED)	Supported	Supported (STARTTLS/ LOGIN DISABLED)

[1] Used for secure messages from CSF clients.

[2] With this setting, the IMAP server does not allow IMAP clients to login if the client has not called STARTTLS yet.

Configuring Integrated Messaging

Follow this procedure to configure the Integrated Messaging capability.

Prerequisites

The system must have a default security certificate and private key installed before SSL connections are permitted on Cisco Unity Express. Use the **show crypto key** command to display the system default certificate-key pair. If no default pair exists, follow the procedure in "Configuring Security" on page 1.

Required Data for This Procedure

Name of a subscriber group that has the vm-imap privilege.

SUMMARY STEPS

1. **config t**
2. **service imap**
3. **enable**
4. **maxsessions** *num-sessions*
5. **session idletimeout** *minutes*
6. **session security** {**ssl** | **none** | **mixed** | **keyLabel** *labelname*}
7. **no enable**
8. **enable**

Note Any changes to the IMAP server configuration require a restart of the IMAP server for the changes to take effect. Steps 7 and 8 restart the IMAP server.

9. **end**
10. **groupname** *groupname* **privilege vm-imap**
11. **end**
12. **username** *username* **group** *groupname*
13. (Optional) **show imap configurations**
14. (Optional) **show imap sessions**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`service imap`**
	Example:
	`se-10-0-0-0(config)# service imap`
		Enters Integrated Messaging configuration mode.

Step 3	**`enable`**
	Example:
	`se-10-0-0-0(config-imap)# enable`
		Enables the Integrated Messaging feature on a system-wide basis.

Step 4	**`maxsessions`** *`num-sessions`*
	Example:
	`se-10-0-0-0(config-imap)# maxsessions 25`
		Specifies the maximum number of concurrent IMAP client sessions. Valid values are 1 to 50. Default is 50.

Step 5	**`session idletimeout`** *`minutes`*
	Example:
	`se-10-0-0-0(config-imap)# session idletimeout 45`
		Specifies the number of minutes an IMAP session can be idle. After this maximum is reached, the system automatically disconnects the session. Valid values are 30 to120 minutes. The default is 30 minutes.

	Command or Action	Purpose

Step 6	**`session security`** `{`**`ssl`** `|` **`none`** `|` **`mixed`** `|` **`keyLabel`** *`labelname`*`}`
	Example:
	`se-10-0-0-0(config-imap)# session security ssl`
		Specifies the type of IMAP connections accepted from IMAP clients. Any IMAP client trying to make any other type of connection will be rejected.
		• **ssl**—Only SSL connections are permitted.
		• **none**—Only non-SSL connections are permitted.
		• **mixed**—Both SSL and non-SSL connections are permitted.
		• **keylabel** *labelname*—Associates the certificate-key pair to the SSL connection. If this option is not specified, then IMAP uses the default certificate key.
		Note The system displays an error message if the certificate-key pair are not configured as the system default before configuring SSL connections for the IMAP client. Beginning with Cisco Unity Express 3.2, you can use the **keyLabel** option to associate the certificate-key pair to the SSL connection. See “Configuring Security” on page 1 to set the certificate-key pair.

Step 7	**`no enable`**
	Example:
	`se-10-0-0-0(config-imap)# no enable`
		Disables the Integrated Messaging feature on a system-wide basis.

Step 8	**`enable`**
	Example:
	`se-10-0-0-0(config-imap)# enable`
		Enables the Integrated Messaging feature on a system-wide basis. This step restarts the IMAP server.

Step 9	**`end`**
	Example:
	`se-10-0-0-0(config-imap)# end`
		Exits Integrated Messaging configuration mode

Step 10	**`groupname`** *`groupname`* **`privilege vm-imap`**
	Example:
	`se-10-0-0-0(config)# groupname sales privilege vm-imap`
	`se-10-0-0-0(config-imap)# groupname imap-users privilege vm-imap`
		Specifies an existing group that will have access to the Integrated Messaging capability. Repeat this step if more than one group will have Integrated Messaging access.

Step 11	**`end`** **Example:** se-10-0-0-0(config)# end	Exits configuration mode.

	Command or Action	Purpose
Step 12	**username** *username* **group** *groupname* **Example:** `se-10-0-0-0# username user4 group sales`	Assigns a subscriber to the group.
Step 13	**show imap configurations** **Example:** se-10-0-0-0# show imap configuration	(Optional) Displays all Integrated Messaging configuration parameters.
Step 14	**show imap sessions** **Example:** se-10-0-0-0# show imap sessions	(Optional) Displays all active Integrated Messaging sessions.

Examples

The following example shows sample output from the **show imap configuration** command:

```
se-10-0-0-0# show imap configuration

Status:                  enabled
Idle Timeout(minutes)    45
Max Sessions:            25
Security Mode:           ssl
```

The following example shows sample output from the **show imap sessions** command:

```
se-10-0-0-0# show imap sessions

Sessions     IP Address     Connect Time                  User ID
====================================================================
  1          10.21.82.244   Wed Nov 16 07:35:02 CST 2005   sales
  2          172.18.10.10   Wed Nov 16 08:23:15 CST 2005   imap-users
  3          172.18.10.5    Wed Nov 16 10:11:40 CST 2005   imap-users
```

Displaying IMAP Sessions

To display IMAP sessions, see "Monitoring Active IMAP and VoiceView Express Sessions" on page 7.

Support for Client Services Framework (CSF)-Based Clients

Client Services Framework (CSF) is a common component that client applications use to integrate with the Cisco Unified Communications suite of products on Windows PC platforms. CSF delivers Cisco Unified Communications features/services to client applications in a common and consistent manner. Client applications based on CSF can access voicemail from CUE using the IMAP interface.

Cisco Unity Express 8.6 supports the following clients that are based on CSF:

- Cisco Unified Personal Communicator (CUPC) 8.5
- Cisco Unified Communications Integration ™ for Microsoft Office Communicator 8.0

The configuration to support the CSF clients is the same as for configuring IMAP clients. See the "Configuring IMAP" section on page 1.

Note To support the receipt of incoming secure messages from CSF clients, the IMAP server **session security** command must be configured to either the "mixed" or "ssl" setting. The CSF client must use port 7993 to connect to Cisco Unity Express. For more information about secure messaging, see the "Configuring Secure Messaging" section on page 33.

Configuring Live Record

This section discusses the following topics:

- Overview, page 9
- Configuring Live Record, page 11

Warning **For legal disclaimer information about this feature, see page ii.**

Overview

This feature enables Cisco Unity Express subscribers to record live conversations and store the recording as a message in their mailbox. They can then play it or forward it to another subscriber or group of subscribers. This feature can also be used between Cisco Unity Express subscribers and nonsubscribers. Do this by conferencing the nonsubscriber's call leg into a Cisco Unity Express recording session and then recording the conversation to the appropriate mailbox. To alert participants that the call is being recorded, Cisco Unity Express periodically beeps.

The recording stops automatically when the call leg to the Cisco Unity Express recording session is terminated or the subscriber's voice mailbox is full, whichever occurs first. Depending on the Cisco Unified Communications Manager or Cisco Unified CME settings, the call leg can terminate either when the conference initiator ends the call or when the last participant ends the call. After the conference is terminated, the voice conversation can continue without further recording. When the live-record session is stopped, the recording is put in the new message state and the MWI is triggered.

Each recording can be saved, deleted, or forwarded just like any other voice mail message and are addressed as being from the subscriber. The recording is applied against the subscriber's mailbox limit until it is deleted.

You can only enable the live-record feature globally for Cisco Unity Express; you cannot enable it on a per-user basis. To initiate a live-record session, users conference to an extension configured as call-forward-all on Cisco Unified Communications Manager or Cisco Unified CME and is setup to forward all incoming calls to the voice mail pilot number.

The maximum number of live-record sessions is controlled by the **voicemail pilot number maxsessions** trigger setting. The size of live-record messages is limited only by the amount of space remaining in the subscriber's voice mailbox. Live-record messages do not trigger the cascading message notification feature.

Note Using a speaker phone with the live record feature can cause clipping of the recorded voice.

Configuration

To configure the live-record feature, you must:

- Configure ad-hoc conferencing for Live Record.

  This configuration includes:

  - Enabling dspfarm services on the voice-card that has voice DSPs for conferencing on the Cisco IOS voice gateway.
  - Enabling SCCP on Cisco Unified CME and creating a SCCP CCM Group to register to Cisco Unified CME.
  - Binding the SCCP protocol to an interface on the voice card or ethernet interface of the router.
  - Setting up the Conferencing DSP Farm and enable all the codecs (taking into consideration local calls, a G711 codec leg to Cisco Unity Express and calls across SIP Trunk (if any) that will be using the Live Record feature.
  - Associating the Cisco Unified CME to the DSP Profile and provide a device name for the conferencing resource to register with Cisco Unified CME.
  - Enabling hardware conferencing on Cisco Unified CME (telephony-service) and specifying the device-name of the conferencing resource that will register with Cisco Unified CME.
  - Defining an Ad-Hoc DN to support Ad-Hoc Conferencing

Note Beginning with Cisco Unified CME 4.3, you can add an octo-line DN which has 8 channels on the DN. Each party will need one channel on the DN, so octo-line DN will support 8 conferencing parties. On Cisco Unified CME 4.1 and 4.2, the ephone-dn cannot be configured for octo-line so use dual-line and create four such dual-line DNs to support 8 party conference.

  For more information on how to configure the Live Record feature on Cisco Unified CME, see the *Cisco Unified Communications Manager Express System Administrator Guide.*

- Configure Live Record and Voicemail pilots numbers on Cisco Unified CME.
- Setup a Live Record DN and Call Forward it to the voice mail pilot number.
- Configure a dial-peer pointing the VM pilot to Cisco Unity Express.
- On Cisco Unified CME 4.3, optionally create a Live Record (LiveRcd) softkey for the ephones that will use the LiveRcd feature and assign the template to the ephones.

  The LiveRcd softkey is used to start and stop a live recording.

- Configure a live-record pilot number on Cisco Unity Express.

  Use the **voicemail live-record pilot-number** *digits* command and supply the live-record pilot number as the *digits* argument.

- Optionally configure the beep duration and interval for live record on Cisco Unity Express.

  You can configure the beep duration and interval on Cisco Unity Express as needed to satisfy any applicable laws concerning notification that a call is being recorded. By default, the beep duration is 250 milliseconds and the beep interval is 15 seconds.

Using Live-Record

After live-record is properly configured, users can use the following sequence of steps to initiate a live-record session. This example assumes a call is already established. The subscriber wanting to record the conversation does not need to be the caller who initiated or received the call.

1. Initiate a conference to the Cisco Unity Express live-record pilot number.

   Press the conference softkey button. The current conversation is paused.
2. Dial the live-record pilot extension number.
3. The live-record pilot extension forwards the call request to the voice mail pilot number.
4. Cisco Unity Express answers the incoming call, detects the live-record pilot extension, and begins recording if the call referrer is a valid Cisco Unity Express subscriber.
5. Complete the conference.

   Press the conference softkey button again. At this point, everything either party says is recorded except the beeps played by Cisco Unity Express.

To end the live-record session, remove the Cisco Unity Express from the conference and continue the call, or hang up and terminate the call.

Error Conditions

The following error conditions can occur for subscribers using live-record:

- No Ports Available — Busy tone plays to the caller
- Invalid Extension (caller is not a local subscriber) — Message plays that explains there is no mailbox associated with the extension.

Limitations

Create a conference soft key and a live-record speed dial key. This gives users the following three-button solution:

1. Press the conference soft key
2. Press the live-record speed dial key
3. Press the conference soft key

Live-record is only available to Cisco Unity Express local subscribers. Remote subscribers or external callers cannot use this feature because it uses the extension number assigned to the caller. However, this feature does not provide a prompt to ask the user to identify the extension and password and help prevent remote users from attempting to use the service.

Live-recorded messages do not trigger a message notification when delivered to the voice mailbox.

Configuring Live Record

Prerequisites

- Cisco Unity Express 3.0 or a later version

- Configure the Live Record feature on Cisco Unified CME and Cisco IOS voice gateway as described in the "Configuration" section on page 10 and the *Cisco Unified Communications Manager Express System Administrator Guide.*

Required Data for This Procedure

Configure the pilot number that you want to use for live recording (the extension number used to forward all incoming calls to the Cisco Unity Express voice mail pilot number).

SUMMARY STEPS

1. **config t**
2. **voicemail live-record pilot-number** *digits*
3. **voicemail live-record** beep duration *digits*
4. **voicemail live-record** beep interval *digits*
5. end
6. (Optional) **show voicemail live-record**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`voicemail live-record pilot-number`** *`digits`*
	Example:
	`se-10-0-0-0(config)# voicemail live-record pilot-number 0210`
		Enables the live-record feature and sets the extension number used to forward all incoming calls to the Cisco Unity Express voice mail pilot number.
		All calls terminated on the Cisco Unity Express voice mail pilot number from this location will bypass the usual voice mail greeting and immediately start recording if the caller is a subscriber.
		Note Do not associate the Live Record pilot CTI port with the JTAPI user (for Cisco Unified Communications Manager environments).

Step 3	**`voicemail live-record beep duration`** *`digits`*
	Example:
	`se-10-0-0-0(config)# voicemail live-record beep duration 240`
		Sets the duration of the live-record beep, which is the elapsed time from when a beep starts playing to when it finishes playing. The range is 50 to 1000 milliseconds.

Step 4	**`voicemail live-record beep interval`** *`digits`*
	Example:
	`se-10-0-0-0(config)# voicemail live-record beep interval 12`
		Sets the live-record beep interval, which is the elapsed time from the end of one beep and the start of the next beep. The range is 1 to 30 seconds.

	Command or Action	Purpose

Step 5	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 6	**`show voicemail live-record`**
	Example:
	`se-10-0-0-0# show voicemail live-record`
		(Optional) Displays the current configuration for the live-record feature.

Examples

The following are samples of output for the **show voicemail live-record** command:

```
se-10-0-0-0# show voicemail live-record

Status: enabled
pilot number:  0295
Conversation beep settings
   duration:   250 milliseconds
   interval:   15 seconds

Status: disabled
pilot number:  disabled
Conversation beep settings
   duration:   disabled
   interval:   15 seconds
```

Configuring Live Reply

This section discusses the following topics:

- Overview, page 13
- Configuring Live Reply, page 17

Overview

This feature enables Cisco Unity Express subscribers who listen to the voice messages by phone or VVE to reply to another user's message by pressing 4-4. When this feature is invoked, Cisco Unity Express attempts to establish a call between the two parties. If the attempt is successful, the subscriber is connected to the called party or the voice call is forwarded based on rules defined by the called party. After the call is ended, the initial connection to voice mail is disconnected and the subscriber is not returned to their voice mail session. To review other voice mail messages after a successful live-reply session, the subscriber must redial the voice mail pilot number.

The behavior when there is a call failure is determined by the system's transfer-mode setting (see the transfer-mode subcommand for the **ccn subsystem sip** command). If transfer mode is set to *blind*, the connection to voice mail is lost when the call is either succeeds or fails. If transfer mode is *semi-attended* or *attended*, the connection to voice mail is retained when there is any call failure, such as an invalid number or busy. The message state is not changed by this feature. For example, if the subscriber is listening to a new message and decides to invoke this feature, the message remains in the new state.

Subscribers can use this feature with regular or deleted messages but cannot be used with messages from the local General Delivery Mailbox (GDM), broadcast messages, expired messages, NDR, or DDR. When subscribers attempt to use this feature with any of these messages, they receive an error voice prompt and are returned to the voice mail menu from which they tried to invoke this feature.

The following sections describe how the two methods of access this feature:

- Accessing Live-Reply from the TUI, page 14
- Accessing Live-Reply from VVE, page 14

Accessing Live-Reply from the TUI

Subscribers can use the live-reply feature from the following three TUI menus:

- New Messages
- Saved Messages
- Deleted Messages

To live-reply to a message, the subscriber must first listen to a message in one of the above queues. The subscriber can also use live reply when the message review menu is played giving the options to reply or forward the message. To use live reply, the subscriber must press 4-4 in sequence.

Accessing Live-Reply from VVE

Unlike the TUI, in VVE there is only one list of voice mail messages. All messages that qualify for live-reply have an additional menu that is displayed when you press the Reply button. This menu allows the subscriber to select the normal voice mail reply or allow a live reply if the caller's information is available.

If the message is forwarded, the live reply feature connects to the last number from which the message was forwarded.

By default, live-reply is disabled. Use either the CLI or GUI at the system level to enable live-reply. Users cannot configure this feature.

This feature uses the E.164 number to make the outbound call. Therefore, the number of the calling party returned as part of voice call must be dialable. How the senders E.164 number is determined depends on how the voice mail was delivered to the subscriber's mailbox. The two possible methods of delivery are:

- Telephone delivered voice mail
- VPIM (Network) delivered voice mail

These methods are discussed in the following sections.

Telephone Delivered Voice Mail

An example of this scenario is when the sender of voice mail calling a subscriber is forwarded to the subscriber's voice mailbox. If the calling party information exists for the sender, it is stored in the voice mail message envelope. The subscriber can listen to this message and attempt to live reply to this message. If the calling party information is not available, attempting to live-reply to a message results in an "Invalid option" error. For more information, see the "Limitations" section on page 15.

VPIM (Network) Delivered Voice Mail

To support this feature, the network message delivered using VPIM between Cisco Unity Express nodes or between Cisco Unity Express and Cisco Unity contains the E.164 number, starting in version 3.0 (if it is configured and available for the subscriber).

You can configure the live-reply feature so that it can be used with existing VPIM capable systems that send only the subscriber's mailbox number (which may or may not be the appropriate E.164 number) instead of the E.164 number. Do this by setting up a rule to define each remote location in your Cisco Unity Express configuration that will be used to determine which E.164 number to dial to reach the author of the VPIM delivered voice mail. This determination is done based on network configuration location settings.

You can configure this rule to use one of the following options as the sender's E.164 number:

- Sender's mailbox ID as the E.164 phone number. This number is found in the VPIM message header from field in the digits before the "@" character.
- Combination of the configured network location prefix followed by the sender's mailbox ID. The network location prefix is given in the location subcommand with the command **voicemail phone-prefix** *prefix-digits*.
- Combination of the network location ID followed by the sender's mailbox ID. The network location ID is specified when defining a network location with the command **network location ID** *location-digits*.
- Concatenation of network location ID, followed by network location prefix, followed by mailbox ID.
- Concatenation of network location prefix, followed by network location ID, followed by mailbox ID.

By default, Cisco Unity Express uses the E.164 number supplied by a peer 3.1 of later version system in the VPIM header, if present. Otherwise it uses the configured rule to determine the E.164 number to use for this message.

In some cases, you can reconfigure remote sites to use the mailbox ID as the E.164 number to dial for live reply. You can use this configuration when:

- The Cisco Unity Express subscriber mailbox IDs are unique across the network and therefore, the mailbox ID is the same as the subscriber extension.
- The Cisco Unified Communications Manager or Cisco Unified CME is also configured to dial from site to site by subscriber extension.

You probably have overlapping extensions between sites. In this case, Cisco Unity Express could be configured to use the remote systems phone prefix with the subscriber's mailbox ID to derive the E.164 number to dial. You can use this method if you configure your Cisco Unified Communications Manager or Cisco Unified CME to implement this dial plan and transform the mailbox ID received in the VPIM message into a unique E.164 address.

In addition to determining how to derive the E.164 phone number to use with live reply, you can also set the precedence of the VPIM E.164 number over the rule derived phone number.

Limitations

Live-reply cannot apply call restrictions on a per-subscriber basis. Because the outbound dialing is from Cisco Unity Express on behalf of the user, any restrictions on dialed numbers must be applied to all users equally. There cannot be a privileged set of Cisco Unity Express subscribers that have a broader set of live-reply dialed numbers. For example, subscribers cannot be divided into groups (such as employees and management) where one group (management) can live-reply to all locations and the other group (employees) can only live-reply to local extensions.

If you use a complex dial-plan, it might be difficult or impossible to configure live-reply to correctly handle remotely delivered VPIM messages. If the remote system is Cisco Unity or an earlier version of Cisco Unity Express, the live-reply number is not included in the VPIM header. This makes it difficult or impossible to determine the E.164 number Cisco Unity Express must dial to reach the sender. For example, a dial plan where mailbox IDs are unrelated to user extensions may make it impossible for the system to derive the E.164 number to call.

Configuration

You can configure the following items for the Live Reply feature:

- Network-precedence
- Calling-number-rule
- Prepend digits for the calling-number-rule
- Restriction table

These items are explained in the following sections.

Network Precedence

Network precedence determines which E.164 number Cisco Unity Express dials when making a live-reply to a VPIM delivered message. It specifies the priority of the following methods of determining the live-reply E.164 number:

- Use only the number of the sender contained in a VPIM message (if present).
- Use the number of the sender contained in a VPIM message (if present). Otherwise, use the number derived using the calling-number-rule CLI described below.
- Use only the number derived using the calling-number-rule CLI described below.

Calling Number Rule

The calling number rule specifies how the live-reply extension is derived from configuration and VPIM vcard data. Knowing the callers E.164 number is essential for live-reply functionality. Note however, knowing the E.164 number for the sender of a voice mail is not required if live-reply disabled.

Table 18-4 defines the behavior of the options for deriving a sender's E.164 number. The last column shows an example of the derived number, assuming that the location ID is configured as 111, the location prefix is configured to 444, and the mailbox ID of the incoming VPIM message is 5678.

Table 18-4 Behavior of the Options for Deriving a Sender's E.164 Number

Option	Description	Example
extension	Use the sender's mailbox ID as the E.164 phone number. This number is in the VPIM message header from field in the digits before the "@"character.	5678
prefix-extension	Use the combination of the configured network location prefix followed by the sender's mailbox ID. The network location prefix is in the location subcommand with the command **voicemail phone-prefix** *prefix-digits*	444-5678
location-extension	Use the combination of the network location ID followed by the sender's mailbox ID. The network location ID is specified when defining a network location with the command **network location ID** *location-digits*.	111-5678
location-prefix-extension	Use the concatenation of network location ID, followed by network location prefix, followed by mailbox ID.	111-444-5678
prefix-location-extension	Use the concatenation of network location prefix, followed by network location ID, followed by mailbox ID.	444-111-5678

Prepend Digits

This setting specifies any additional digits that you want to be dialed before the calling-number rule derived E.164 number for a remote subscriber.

Restriction Table

The restriction table enable you to control how the live reply feature is used. As described in the "Configuring Restriction Tables" section on page 32, use the following parameters to define a restriction table:

- **preference** — Order of this string in the restriction table. The system searches the strings in order of preference, starting with 1. Valid values are 1 to 10.
- **pattern** — Call pattern to be matched. Valid characters are digits 0 to 9, asterisk (*), or dot (.). The table accepts duplicate call patterns.
- **allowed** — Permits phone numbers with this pattern to be assigned to message notification devices.
- **disallowed** — Prevents phone numbers with this pattern from being assigned to message notification devices.
- **insert** — Inserts the dial string in the proper place in the table.

Configuring Live Reply

Prerequisites

- Cisco Unity Express 3.0 or a later version
- To restrict specified extensions from using this feature, you must configure a restriction table as described in the "Configuring Restriction Tables" section on page 32.

Required Data for This Procedure

This procedure requires the prepend digits (any additional digits that you want dialed before the calling-number rule derived E.164 number for a remote subscriber).

SUMMARY STEPS

1. **config t**
2. **voicemail live-reply enable**
3. **voicemail live-reply network-precedence** {**phonenumberE164** [**calling-number-rule**] | **calling-number-rule**}
4. **voicemail live-reply calling-number-rule** {**extension** | **prefix-extension** | **location-extension** | **location-prefix-extension** | **prefix-location-extension**}
5. **voicemail live-reply restriction** *table-name*
6. **network location id** *ID_number*
7. **calling-number-rule prepend-digits** *digits*
8. **end**
9. (Optional) **show voicemail live-reply**
10. (Optional) **show network detail location id** *loc-id*
11. (Optional) **show voicemail live-reply restriction-table**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`voicemail live-reply enable`**
	Example:
	`se-10-0-0-0(config)# voicemail live-reply enable`
		Enables the Live Reply feature on a system-wide basis.

	Command or Action	Purpose

Step 3	**voicemail live-reply network-precedence** {**phonenumberE164** [**calling-number-rule**] | **calling-number-rule**}
	Example:
	`se-10-0-0-0(config)# voicemail live-reply network-precedence calling-number-rule`
		Determines which live-reply E.164 number Cisco Unity Express dials when making a live-reply to a VPIM delivered message. Specifies the use of one of the following methods of determining the live-reply E.164 number:
		• Use only the number of the sender contained in a VPIM message (if present)
		• Use the number of the sender contained in a VPIM message (if present). Otherwise, use the number derived using the calling-number-rule CLI described in Step 4 below.
		• Use only the number derived using the calling-number-rule CLI described in Step 4 below.

Step 4	**voicemail live-reply calling-number-rule** {**extension** | **prefix-extension** | **location-extension** | **location-prefix-extension** | **prefix-location-extension**}
	Example:
	`se-10-0-0-0(config)# voicemail live-reply calling-number-rule location-extension`
		Specifies how the live-reply extension is derived from the configuration and the VPIM vcard data. This determines how to construct the remote subscriber's E.164 phone number. For more information, see the "Calling Number Rule" section on page 16Table 18-3.

Step 5	**voicemail live-reply restriction** *table-name* **Example:** `se-10-0-0-0(config)# voicemail live-reply restriction live-reply-r-table`	Associates a restriction table to the live reply feature.
Step 6	**network location id** *ID_number* **Example:** `se-10-0-0-0(network)# network location id 112`	Enters network location mode.
Step 7	**calling-number-rule prepend-digits** *digits* **Example:** `se-10-0-0-0(config)# calling-number-rule prepend-digits 91`	Specifies additional digits to dial before the calling-number rule derived E.164 number for a remote subscriber.

Step 8	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 9	**show voicemail live-reply** **Example:** `se-10-0-0-0# show voicemail live-reply`	(Optional) Displays the current configuration for the live-reply feature.

	Command or Action	Purpose

Step 10	**`show network detail location id`** *`loc-id`*
	Example:
	`se-10-0-0-0# show network detail location id 112`
		(Optional) Displays information about the current network location, including the prepend digits setting.

Step 11	**`show voicemail live-reply restriction-table`**
	Example:
	`se-10-0-0-0# show voicemail live-reply restriction-table`
		(Optional) Displays the restriction-table associated with the live-reply feature.

Examples

The following is sample output for the **show voicemail live-reply** command:

```
se-10-0-0-0# show voicemail live-reply

Status:           enabled
Remote subscriber dialing
  calling number rule: location+prefix+extension
  number preference:   E164 number then calling number rule

Restriction Table:        live-reply-restriction
Minimum digits allowed:   1
Maximum digits allowed:   30
Dial Strings:
Preference    Call Pattern    Allowed
    1             19000...     yes
    2             170000       yes
    3              *           yes
```

The following example shows information about the remote Cisco Unity Express location with the ID of 102:

```
se-10-0-0-0# show network detail location id 102

Name:                      Dallas/Fort Worth
Abbreviation:              DFW
Email domain:              dfw.mycompany.com
Minimum extension length:  2
Maximum extension length:  15
Phone prefix:              4
VPIM encoding:             dynamic
Send spoken name:          enabled
Send vCard:                enabled
State:                     enabled
VPIM broadcast ID:         vpim-broadcast
Sent msg count:            0
Received msg count:        0
Live-reply calling number rule prepend: 91
```

The following is sample output for the **show voicemail live-reply restriction-table** command:

```
se-10-0-0-0# show voicemail live-reply restriction-table

Restriction Table: live-reply-restriction
Minimum digits allowed:   1
Maximum digits allowed:   30
```

```
Dial Strings:
Preference    Call Pattern    Allowed
    1             19000...      yes
    2             170000        yes
    3               *           yes
```

Configuring the Delivery of Future Messages

Cisco Unity Express subscribers may create and schedule voice-mail messages for future delivery to one or more subscribers on the local system or on configured remote network locations.

You do not need to configure this feature for subscribers.

Subscribers can schedule message delivery for up to 1 year in advance.

Senders can readdress, rerecord, and review the message before scheduling it for delivery. After the system confirms the date and time for the future delivery, the sender cannot change or delete the message.

You can display and delete messages marked for future delivery.

A subscriber can schedule any number of messages for future delivery if the subscriber’s mailbox has enough space. The system counts all the sender’s future messages against the sender’s quota until a message is sent. After a future message is delivered, it is counted against the recipient’s quota.

The following sections describe this feature:

- Permitted Subscribers, page 21
- Message Delivery Time, page 21
- System Status Impact, page 22
- Unsuccessful Message Delivery, page 22
- Loss of Future Messages, page 22
- Incorrect Message Delivery, page 22
- Backup and Restore of Future Messages, page 23
- Displaying and Deleting Future Messages, page 23

Permitted Subscribers

No special privileges are required to use this feature.

All subscribers configured on the system have access to this feature.

Message Delivery Time

Any change or drift in the system time impacts the message delivery. For example, a sender schedules a message for a 4:00 p.m. delivery when the system time is 3:00 p.m.

- If the system time jumps ahead by 15 minutes, the system delivers the message at its new 4:00 p.m. Only 45 minutes, not 1 hour, separates the original scheduling of the message delivery and the actual delivery.
- If the system clock falls behind by 15 minutes, the system delivers the message at 4:00 p.m., which is 1 hour and 15 minutes from the time of the original scheduling.

- If the system time moves forward beyond the scheduled time, such as by 2 hours, the system delivers the message immediately after the time change.

System Status Impact

If the sending system is in a shutdown state with messages scheduled to be delivered during that time, the system delivers the messages when the system is up again.

If the sending system is in an “offline” state with messages scheduled to be delivered during that time, the system delivers the messages when the system returns to the “online” state.

Unsuccessful Message Delivery

If you change the IP address or hostname of the remote location before delivery of a scheduled message, the system delivers the message successfully.

Message delivery fails in the following situations:

- Networking is disabled on a sending system before delivering a scheduled message to a remote network location.

  For example, location A has a message scheduled for delivery to remote location B on 15-April 2006. You disable location A on 14-April-2006. Message delivery fails.
- Networking is disabled on the remote location before delivery of the scheduled message.
- The remote location is disabled before delivery of the scheduled message.

In all cases, the system generates a nondelivery receipt (NDR).

Loss of Future Messages

Multiple scenarios can cause the loss of future messages:

- If you delete a sender’s mailbox, the system deletes any scheduled messages from that sender.
- If the sender’s mailbox is disabled, the system does not delete the messages immediately. At the scheduled time, the system checks the status of the sender’s mailbox. If the mailbox is enabled, the system delivers the scheduled message. If the mailbox is disabled, the system deletes the messages.
- If the recipient or remote location of a scheduled message is deleted, the system does not delete the scheduled message immediately. At the time of delivery, the system checks if the recipient or remote location is deleted. If the recipient or remote location is restored, the system delivers the message successfully. If the recipient or remote location is deleted, the system deletes the message and generates an NDR.

Incorrect Message Delivery

Subscriber or network configuration changes may impact delivery of scheduled messages.

- A message is scheduled for delivery on 12-April-2006 to Subscriber1 at extension 1234 at remote location A. On 11-April-2006, you change Subscriber1’s extension to 5678. The system cannot deliver the message and generates an NDR.

- A message is scheduled for delivery on 12-April-2006 to Subscriber1 at extension 1234 at remote location A. On 11-April-2006, you delete Subscriber1 and gives Subscriber1's extension to Subscriber2. The system delivers the scheduled message successfully to Subscriber2.

Backup and Restore of Future Messages

The system backs up messages scheduled for future delivery as part of a data backup. When that backup is restored, the system delivers the scheduled messages at the appropriate times. If the scheduled delivery time is in the past, the system delivers those messages when as the system is restored.

Recipients may receive a scheduled message more than once. For example, you back up the system on 20-March-2006. This backup contains messages scheduled for 25-March-2006. On 26-March-2006, the system experiences a power outage. The administrator uses the 20-March-2006 backup to restore the system. The system redelivers the scheduled messages contained in the backup file.

Displaying and Deleting Future Messages

To display and delete future messages, see "Monitoring Future Messages" on page 6.

Configuring Nonsubscriber Message Delivery

This section discusses the following topics:

- Overview, page 23
- Configuring Nonsubscriber Message Delivery, page 24

Overview

This feature gives Cisco Unity Express subscribers the ability to record a voice message and send it to an external number or nonsubscriber at the predefined time up to 1 year in advance. The subscriber who is sending the message can readdress and rerecord the message, change the message delivery options, and review the message while setting it up for delivery. You can also use the same functionality to simply forward a voice message.

Messages with no audio, typically faxes and fax NDR, may not be forwarded to an external number. Only faxes with a voice attachment are allowed.

After subscribers configure messages for delivery, they do not receive any indication that there are messages marked for delivery to nonsubscribers. However, the administrator can view and delete any messages that are marked for future delivery to nonsubscribers. To provide this functionality, enhancements to the future delivery commands are included with this feature.

Limitations to this functionality include:

- Messages that are composed and sent immediately cannot be deleted or recalled.
- No validations are performed for the external numbers. (However, they are checked against the dialing restriction table with which they are associated.)
- You can use a maximum of five external numbers for addressing a message.
- The number of simultaneous calls out to external numbers is limited to two.

The subscribers use the same method as before 3.0 to send messages or to compose messages for future delivery. To send a message to nonsubscribers, subscribers enter the nonsubscriber number when the TUI prompts them to enter the recipients' number after pressing #4. The system does not attempt to validate any of these numbers.

The message is delivered to the called number regardless of who answers the phone or whether the called number is forwarded to another number. The messages are delivered based on the current system time (within a grace period of 5 minutes of the actual scheduled time). A message is delivered successfully when:

- The called number picks up and answers.
- The called number is forwarded to another number and is then picked up and answered.

If a system is shutdown or offline and it has messages scheduled to be delivered during that period, those messages are delivered when the system is running again.

When a subscriber's mailbox is deleted, all messages scheduled for delivery by that subscriber are also deleted. However, the messages are not deleted when a subscriber's mailbox is disabled. When a message is scheduled to be delivered, the system verifies that sender's mailbox is enabled. A message is discarded only if the mailbox is disabled at that time.

Any messages scheduled for delivery are backed up as part of a regular data backup. When you restore a backup, all messages in the backup that are scheduled for delivery are sent to the recipients as specified. If the scheduled delivery time of some of the messages have passed, they are sent when the system is up after the restore. Therefore, it is possible for recipients to receive a message more than once.

Messages to nonsubscribers are contained in the future message queue until their scheduled time of delivery. These messages are counted as part of the sender's quota until they are removed from the message queue. A subscriber can schedule any number of messages for the delivery, if there is space available in their mailbox.

When a message is delivered, the prompt played to nonsubscribers is one of the following:

- "Hello. This is the Cisco Unity Express Messaging System. You have a message from *spoken_name* at *E164_extension*. To listen to the message, press 1."
- "Hello. This is the Cisco Unity Express Messaging System. You have a message from *E164_extension*. To listen to the message, press 1."
- "Hello. This is the Cisco Unity Express Messaging System. You have a message from an unknown sender. To listen to the message, press 1."

After listening to a message, a nonsubscriber can repeat the playing of the message up to two times by responding to the prompt "To repeat this message, press 1."

When a subscriber sends a message to a nonsubscriber and the sending subscriber's mailbox is full, the message cannot be delivered. If this is the case, the following prompt is played to the sender:

"Your message could not be delivered to extension *external_number*. Your mailbox is full. You cannot send messages to a phone number. To send another message, press 1. To exit, press *."

Configuring Nonsubscriber Message Delivery

Prerequisites

- Cisco Unity Express 3.0 or a later version
- To restrict this feature from delivering messages to specified external numbers, you must configure a restriction table as described in the "Configuring Restriction Tables" section on page 32.

Required Data for This Procedure

Name of the restriction table you want to associate with this feature.

SUMMARY STEPS

1. **config t**
2. **voicemail non-subscriber restriction** *table-name*
3. **end**
4. (Optional) **show voicemail messages future**
5. (Optional) **show voicemail non-subscriber restriction-table**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**voicemail non-subscriber restriction** *table-name* **Example:** `se-10-0-0-0(config)# voicemail non-subscriber restriction non-subscriber-r-table`	Associates a restriction table to the nonsubscriber message delivery feature

Step 3	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 4	**show voicemail messages future** **Example:** `se-10-0-0-0# show voicemail messages future`	(Optional) Displays the future message delivery, including the external numbers. The external numbers are suffixed with (External).
Step 5	**show voicemail non-subscriber restriction-table** **Example:** `se-10-0-0-0# show voicemail non-subscriber restriction-table`	(Optional) Displays the restriction-table associated with the nonsubscriber voice mail feature.

Examples

```
se-10-0-0-0# show voicemail messages future

Message ID:      JMX0637L023-NM-FOC08221WRB-731357131983
Sender:          User1
Recipient(s):    UserA
Length(sec):     30
Delivery time:   Mon, 11 April 2006 08:0000-0800 (PST)
```

```
Message ID:      JMX0637L023-NM-FOC08221WRB-731183375855
Sender:          User2
Recipient(s):    UserB, 95550041 (External)
Length(sec):     20
Delivery time:   Wed, 13 April 2006 10:15:00-0800 (PST)

se-10-0-0-0# show voicemail msg-notification restriction-table

Restriction Table: msg-restriction
Minimum digits allowed:   1
Maximum digits allowed:   30
Dial Strings:
Preference    Call Pattern    Allowed
    1             19000...     yes
    2             170000       yes
    3              *           yes
```

Configuring Broadcast Messages

This chapter describes the procedures for configuring the networking capability on the local Cisco Unity Express voice-mail system and contains the following sections:

- Overview of Broadcast Messages, page 26 (optional)
- Configuring Broadcast Messages, page 27 (optional)
- Enabling the MWI Lights for Broadcast Messages, page 28 (optional)
- Displaying Broadcast Messages, page 29 (optional)
- Deleting a Broadcast Message, page 30 (optional)
- Changing Broadcast Message Start and End Times, page 30 (optional)
- Disabling Broadcast Privileges for a Group, page 31 (optional)
- Disabling MWI Lights for Broadcast Messages, page 31 (optional)
- Configuring the Local-Broadcast Privilege, page 31 (optional)

Overview of Broadcast Messages

Cisco Unity Express permits sending broadcast messages to local and remote network locations. Cisco Unity Express permits subscribers with the broadcast privilege to send local and network broadcast messages. Subscribers obtain this privilege as members of a group that has the broadcast privilege.

Sending a broadcast message is available through the Cisco Unity Express telephone user interface (TUI).

The broadcast message sender has the option to readdress, rerecord, and review the message before sending it out. The sender also can set the start and end times for the message and the number of days the broadcast message plays before the system deletes it. The maximum life of a broadcast message is 365 days. The default message lifetime is 30 days.

The sender can include any or all of the remote locations configured on the local system. The remote addresses can be location numbers or location names. When using the location name, the number of matches may resolve into several locations. If the number of locations is less than or equal to 4, the system gives the sender the option to select the exact location. If the number of matches is greater than 4, the sender must enter more letters to narrow the search.

All subscribers at the remote location receive the broadcast message. The recipients hear the message immediately after logging in to their voice mailboxes. The recipients cannot interrupt the message with any DTMF key. Recipients can save or delete the broadcast message; they cannot reply or forward a broadcast message.

The system administrator at each location determines how or when the message waiting indicator (MWI) lights.

It is possible for the MWI lights to turn on for a broadcast message on some systems but not for others.

Configuring Broadcast Messages

Perform the following procedures to configure broadcast messages:

- Configuring a Group with Broadcast Privileges, page 27.
- Configuring the Broadcast Message Length and Expiration Time, page 27

Configuring a Group with Broadcast Privileges

Use the following EXEC mode command to configure a group with broadcast privileges:

group *group-name* privilege broadcast

where *group-name* is the set of subscribers who will have the capability of creating and sending broadcast messages.

The following example assigns the broadcast privilege to a group named managers:

```
se-10-0-0-0# group managers privilege broadcast
```

Configuring the Broadcast Message Length and Expiration Time

Use the following procedure to configure the local system for broadcast messages.

Required Data for This Procedure

The following information is required to configure the broadcast message length and expiry time:

- Broadcast message length, in seconds
- Broadcast message expiry time, in days

SUMMARY STEPS

1. **config** t
2. **voicemail broadcast recording time** *broadcast-length*
3. **voicemail default broadcast expiration time** *broadcast-days*
4. **exit**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
	`se-10-0-0-0(config)#`
		Enters configuration mode.

Step 2	**`voicemail broadcast recording time`** *`broadcast-length`*
	Example:
	`se-10-0-0-0(config)# voicemail broadcast recording time 120`
		Specifies the maximum length of broadcast messages, in seconds. Valid values are 10 to 3600.

Step 3	**`voicemail default broadcast expiration time`** *`broadcast-days`*
	Example:
	`se-10-0-0-0(config)# voicemail default broadcast expiration time 90`
		Specifies the number of days to store broadcast messages. The maximum value is 365 days.

Step 4	**`exit`**
	Example:
	`se-10-0-0-0(config)# exit`
	`se-10-0-0-0#`
		Exits configuration mode.

Examples

The following example sets the broadcast message length to 20 seconds and the expiration time to 2 days.

```
se-10-0-0-0# config t
se-10-0-0-0(config)# voicemail broadcast recording time 20
se-10-0-0-0(config)# voicemail default broadcast expiration time 2
se-10-0-0-0(config)# exit
```

Enabling the MWI Lights for Broadcast Messages

Use the following Cisco Unity Express configuration mode command to enable the MWI lights when a voice mailbox receives a broadcast message.

voicemail broadcast mwi

The following example illustrates enabling the MWI lights for broadcast messages:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# voicemail broadcast mwi
se-10-0-0-0(config)# end
```

Displaying Broadcast Messages

Multiple commands are available to display information about broadcast messages.

Displaying Current Broadcast Messages

Use the following EXEC mode command to display broadcast messages:

show voicemail broadcast messages

The output for this command may appear similar to the following:

```
se-10-0-0-0# show voicemail broadcast messages

Message ID:         JMX0824L4R4-NM-FOC08221WSQ-1103139552166-NBCM
Sender:             1005@nyc.mycompany.com
Length(secs):       10
Start time:         21:12:54 Nov 23 2005 PST
End time:           11:48:06 Dec 4 2005 PST

Message ID:         JMX0824L4R4-NM-FOC08221WSQ-1103084723247-NBCM
Sender:             /sw/local/users/user45
Length(secs):       30
Start time:         08:41:09 Dec 7 2005 PST
End time:           09:00:00 Jan 3 2006 PST
```

If a subscriber at a remote network location sends the broadcast message, the e-mail domain of the remote sender appears in the Sender field. If a local subscriber sends the message, the pathname to the sender appears in the field.

If no broadcast messages are active, the output may appear similar to this:

```
se-10-0-0-0# show voicemail broadcast messages
No Broadcast Messages
```

Displaying Broadcast Messages Received Per Mailbox

The following command is modified to display broadcast message information:

show voicemail mailboxes

The column BCST displays the number of broadcast messages received by the mailboxes. The output for this command may appear similar to the following:

```
se-10-0-0-0# show voicemail mailboxes

OWNER              MSGS NEW SAVE DEL BCST MSGTIME MBXSIZE USED
user1              16   16   0    0   4   3000    3000    100%
user2              16   16   0    0   4   3000    3000    100%
user3              16   16   0    0   4   3000    3000    100%
user4              16   16   0    0   4   3000    3000    100%
```

Displaying Broadcast Messages Received by the Voice-Mail System

The following command is modified to display broadcast message information:

show voicemail usage

The row **broadcast message count** displays the number of broadcast messages received by the voice mail system. The output for this command may appear similar to the following:

```
se-10-0-0-0# show voicemail usage

personal mailboxes:                  120
general delivery mailboxes:          0
orphaned mailboxes                   0
capacity of voicemail (minutes):     6000
allocated capacity (minutes):        6000.0
total message time used (seconds):   7543
total message count:                 7001
average message length (seconds):    1.0774175117840308
broadcast message count:             4
future message count:                0
networking message count:            0
greeting time used (seconds):        3
greeting count:                      1
average greeting length (seconds):   3.0
total time used (seconds):           7546
total time used (minutes):           125.76667022705078
percentage time used (%):            2
messages left since boot:            0
messages played since boot:          0
messages deleted since boot:         0
```

Deleting a Broadcast Message

Use the following EXEC mode command to delete a broadcast message:

voicemail broadcast message *message-id* **delete**

where *message-id* is the coded identifier for the message. Use the **show voicemail broadcast messages** command to obtain the message ID.

The following example deletes a broadcast message:

```
se-10-0-0-0# voicemail broadcast message JMX0824L4R4-NM-FOC08221WSQ-1103139552166-NBCM
delete
```

Changing Broadcast Message Start and End Times

Use the following EXEC mode commands to change the start and end times of a broadcast message:

voicemail broadcast message *message-id* **starttime** *time date*

voicemail broadcast message *message-id* **endtime** *time date*

where *message-id* is the coded identifier for the message, *time* is the time in the 24-hour clock format, and *date* has the format YYYY-MM-DD. Use the **show voicemail broadcast messages** command to obtain the message ID.

The following examples change the start and end times for a broadcast message:

```
se-10-0-0-0# voicemail broadcast message JMX0824L4R4-NM-FOC08221WSQ-1103139552166-NBCM
starttime 10:00 2004-09-15
se-10-0-0-0# voicemail broadcast message JMX0824L4R4-NM-FOC08221WSQ-1103139552166-NBCM
endtime 15:30 2004-09-16
```

Disabling Broadcast Privileges for a Group

Use the following EXEC mode command to remove the broadcast privileges from a group:

no group *groupname* **privilege broadcast**

where *groupname* is the group to have the broadcast privileges removed.

The following example disables the broadcast privilege for the group named managers:

```
se-10-0-0-0# no group managers privilege broadcast
```

Disabling MWI Lights for Broadcast Messages

Use the following Cisco Unity Express configuration mode command to disable the MWI lights for broadcast messages.

no voicemail broadcast mwi

The following example illustrates how to disable the MWI lights for broadcast messages:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# no voicemail broadcast mwi
se-10-0-0-0(config)# end
```

Configuring the Local-Broadcast Privilege

Cisco Unity Express provides a local-broadcast privilege that permits subscribers to send broadcast messages only to other subscribers on the local system. The local-broadcast privilege is a subset of the broadcast privilege, which permits subscribers to send broadcast messages to all configured subscribers and locations on the network.

Cisco Unity Express does not create a default group for local-broadcast subscribers. The administrator must create a group of subscribers and assign the local-broadcast privilege to it.

To configure this option from the GUI, use the **Configure > Groups** option and select a group.

Prerequisites

Name of the group that will be assigned to the local-broadcast privilege. Verify that the group exists before assigning the privilege.

SUMMARY STEPS

1. **config t**
2. **groupname** *groupname* **privilege local-broadcast**
3. **end**
4. (Optional) **show groups privileges**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0#` **`config t`**
		Enters configuration mode.

Step 2	**`groupname`** *`groupname`* **`privilege local-broadcast`**
	Example:
	`se-10-0-0-0(config)#` **`groupname engineers privilege local-broadcast`**
		Assigns the local-broadcast privilege to the group *groupname*.

Step 3	**`end`**
	Example:
	`se-10-0-0-0(config)#` **`end`**
		Exits configuration mode.

Step 4	**`show groups privileges`**
	Example:
	`se-10-0-0-0#` **`show groups privileges`**
		(Optional) Displays the privileges assigned to configured groups.

Example

The following example displays the privileges for multiple groups.

```
se-10-0-0-0# show groups privileges

GROUPID                         PRIVILEGES
Administrators                  superuser ManagePrompts ManagePublicList
Administrators                  ViewPrivateList
Broadcasters                    broadcast
managers                        broadcast ViewPrivateList
engineers                       local-broadcast
```

Configuring Restriction Tables

This section discusses the following topics:

- Overview, page 32
- Toll Fraud Prevention, page 34
- Configuring Restriction Tables, page 36

Overview

The following features use restriction tables to enable you to restrict access to the feature's functionality:

- Fax

- Live reply
- Message notification
- Nonsubscriber message delivery
- Caller call flow customization (see "Configuring Call Flow Customization" section on page 18.)

For each of these features, the restriction table controls the phone numbers that subscribers can use to access the feature. These restrictions are available only for phone devices and numeric pagers.

The system provides a predefined table that can be modified by the administrator. The table applies to all subscribers and groups on the system. A typical use of this table is to prevent the use of long-distance or international numbers for the feature

The system checks the restriction table when the subscriber is assigning phone numbers to phone devices (such as a cell phone, home phone, or work phone), to a numeric pager, and before making an outcall. If a phone number is listed in the table as restricted, the system sends a message to the subscriber.

If a subscriber has a number configured for a device and the administrator later restricts that number system-wide, notification calls will not be made to that number. The administrator must remove the number for the individual subscriber.

Cisco Unity Express provides a default restriction table that defines two requirements:

- Minimum and maximum number of digits, including access codes, allowed in a phone number. The minimum is 1 digit and the maximum is 30 digits. The default is 1 digit.
- A maximum of 10 dial strings that represent the restricted numbers. Each string consists of a call pattern and a setting that specifies if a phone number matching the pattern is restricted or not.

  Valid patterns can include digits 0 to 9, asterisk (*), and dot (.). The * indicates a match of zero or more digits. Each dot serves as a placeholder for 1 digit.

  Valid setting values are allowed or disallowed.

  When a subscriber tries to set up or change a phone number assigned to a device, the system verifies that the number has the allowed number of digits. If it does not, the subscriber receives a system message.

  If the number of digits is acceptable, the system checks the number against the dial patterns in the restriction table, starting with the first pattern (preference 1). If the number does not match the first pattern, the system checks the next pattern in the table (preference 2), and so forth until a match is found. The system either permits or restricts the call as specified in the dial string.

The default restriction table permits all phone numbers to be used, as shown in Table 18-5.

Table 18-5 Default Restriction Table

Preference	Call Pattern	Allowed
1	*	Yes

You can change only the preference and permission of this pattern.

The restriction table can contain identical dial strings, which have the same call pattern and permission setting. This includes the default pattern. You can delete any of these dial strings if the table contains *at least one* default pattern.

Table 18-6 illustrates a restriction table with international numbers and restricted numbers.

Table 18-6 Restriction Table with International Numbers

Preference	Call Pattern	Allowed
1	9011*	No
2	91..........	No
3	*	Yes

Table 18-7 illustrates a restriction table that permits one number in an area code but restricts all other numbers in that area code.

Table 18-7 Restriction Table with Restricted Area Code

Preference	Call Pattern	Allowed
1	9011*	No
2	912225550150	Yes
3	91222.......	No
4	*	Yes

Following are the parameters that you can configure for restriction tables:

- **min-digits** — Minimum number of digits for a specified restriction table. Valid values for the minimum number of digits are 1 to 30. The default is 1.
- **max-digits** — Maximum number of digits for a specified restriction table. Valid values for the maximum number of digits are 1 to 30. The default is 1.
- **preference** — Order of this string in the restriction table. The system searches the strings in order of preference, starting with 1. Valid values are 1 to 10.
- **pattern** — Call pattern to be matched. Valid characters are digits 0 to 9, asterisk (*), or dot (.). The table accepts duplicate call patterns.
- **allowed** — Permits phone numbers with this pattern to be assigned to message notification devices.
- **disallowed** — Prevents phone numbers with this pattern from being assigned to message notification devices.
- **insert** — Inserts the dial string in the proper place in the table.

Toll Fraud Prevention

When a Cisco router platform is installed with a voice-capable Cisco IOS software image, appropriate features must be enabled on the platform to prevent potential toll fraud exploitation by unauthorized users. Deploy these features on all Cisco router Unified Communications applications that process voice calls, such as Cisco Unified Communications Manager Express (CME), Cisco Survivable Remote Site Telephony (SRST), Cisco Unified Border Element (UBE), Cisco IOS-based router and standalone analog and digital PBX and public-switched telephone network (PSTN) gateways, and Cisco contact-center VoiceXML gateways. These features include, but are not limited to, the following:

- Disable secondary dial tone on voice ports—By default, secondary dial tone is presented on voice ports on Cisco router gateways. Use private line automatic ringdown (PLAR) for foreign exchange office (FXO) ports and direct-inward-dial (DID) for T1/E1 ports to prevent secondary dial tone from being presented to inbound callers.
- Cisco router access control lists (ACLs)—Define ACLs to allow only explicitly valid sources of calls to the router or gateway, and therefore to prevent unauthorized Session Initiation Protocol (SIP) or H.323 calls from unknown parties to be processed and connected by the router or gateway.
- Close unused SIP and H.323 ports—If either the SIP or H.323 protocol is not used in your deployment, close the associated protocol ports. If a Cisco voice gateway has dial peers configured to route calls outbound to the PSTN using either time division multiplex (TDM) trunks or IP, close the unused H.323 or SIP ports so that calls from unauthorized endpoints cannot connect calls. If the protocols are used and the ports must remain open, use ACLs to limit access to legitimate sources.
- Change SIP port 5060—If SIP is actively used, consider changing the port to something other than well-known port 5060.
- SIP registration—If SIP registration is available on SIP trunks, turn on this feature because it provides an extra level of authentication and validation that only legitimate sources can connect calls. If it is not available, ensure that the appropriate ACLs are in place.
- SIP Digest Authentication—If the SIP Digest Authentication feature is available for either registrations or invites, turn this feature on because it provides an extra level of authentication and validation that only legitimate sources can connect calls.
- Explicit incoming and outgoing dial peers—Use explicit dial peers to control the types and parameters of calls allowed by the router, especially in IP-to-IP connections used on Cisco Unified CME, Cisco Unified SRST, and Cisco UBE. Incoming dial peers offer additional control on the sources of calls, and outgoing dial peers on the destinations. Incoming dial peers are always used for calls. If a dial peer is not explicitly defined, the implicit dial peer 0 is used to allow all calls.
- Explicit destination patterns—Use dial peers with more granularity than .T for destination patterns to block disallowed off-net call destinations. Use class of restriction (COR) on dial peers with specific destination patterns to allow even more granular control of calls to different destinations on the PSTN.
- Translation rules—Use translation rules to manipulate dialed digits before calls connect to the PSTN to provide better control over who may dial PSTN destinations. Legitimate users dial an access code and an augmented number for PSTN for certain PSTN (for example, international) locations.
- Tcl and VoiceXML scripts—Attach a Tcl/VoiceXML script to dial peers to do database lookups or additional off-router authorization checks to allow or deny call flows based on origination or destination numbers. Tcl/VoiceXML scripts can also be used to add a prefix to inbound DID calls. If the prefix plus DID matches internal extensions, then the call is completed. Otherwise, a prompt can be played to the caller that an invalid number has been dialed.
- Host name validation—Use the “permit hostname” feature to validate initial SIP Invites that contain a fully qualified domain name (FQDN) host name in the Request Uniform Resource Identifier (Request URI) against a configured list of legitimate source hostnames.
- Dynamic Domain Name Service (DNS)—If you are using DNS as the “session target” on dial peers, the actual IP address destination of call connections can vary from one call to the next. Use voice source groups and ACLs to restrict the valid address ranges expected in DNS responses (which are used subsequently for call setup destinations).

For more configuration guidance, see the “Cisco IOS Unified Communications Toll Fraud Prevention” paper.

Configuring Restriction Tables

The following sections describe how to configure restriction tables:

- "Creating a Restriction Table" section on page 36 (optional)
- "Deleting a Restriction Table" section on page 37 (optional)
- "Configuring a Restriction Table" section on page 38 (optional)

Creating a Restriction Table

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

None.

SUMMARY STEPS

1. **config t**
2. **restriction** *table-name*
3. **end**
4. (Optional) **show restriction table** [*table-name* | **all**]

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`restriction`** *`table-name`* **`create`**
	Example:
	`se-10-0-0-0(config)# restriction live-reply create`
		Creates a restriction table.

Step 3	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 4	**`show restriction table`** [*`table-name`*|**`all`**] **Example:** `se-10-0-0-0# show restriction table live-reply`	(Optional) Displays the specified restriction tables.

Examples

The following is sample output for the **show restriction-table** *table-name* command:

```
se-10-0-0-0# show restriction-table fax-restriction

Restriction Table:        fax-restriction
Minimum digits allowed:   1
Maximum digits allowed:   30
Dial Strings:
Preference    Call Pattern    Allowed
    1             19000...     yes
    2             170000       yes
    3              *           yes
```

Deleting a Restriction Table

Prerequisites

None.

Required Data for This Procedure

None.

SUMMARY STEPS

1. **config t**
2. **restriction** *table-name* **delete**
3. **end**
4. (Optional) **show restriction tabl**e [*table-name* | **all**]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** se-10-0-0-0# config t	Enters configuration mode.
Step 2	**restriction** *table-name* **delete** **Example:** se-10-0-0-0(config)# restriction live-reply delete	Deletes a restriction table.

	Command or Action	Purpose

Step 3	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 4	**show restriction table** [*table-name*|**all**] **Example:** `se-10-0-0-0# show restriction table live-reply`	(Optional) Displays the specified restriction tables.

Examples

To see sample output for the **show restriction-table** *table-name* command, see the "Examples" section on page 37.

Configuring a Restriction Table

To configure a restriction table, you can set any of the following parameters or you can accept the default values:

- Minimum digits
- Maximum digits
- Dial-string preference

Prerequisites

To use restriction tables with the following features, you must have Cisco Unity Express 3.0 or a later version:

- Fax
- Live reply
- Message notification
- Nonsubscriber message delivery.

Required Data for This Procedure

None.

SUMMARY STEPS

1. **config t**
2. **restriction** *table-name* **dial-string preference** *number* **pattern** *pattern-string* **{allowed|disallowed} [insert]**
3. **restriction** *table-name* **min-digits** *num-of-digits*
4. **restriction** *table-name* **max-digits** *num-of-digits*
5. **end**
6. (Optional) **show restriction tabl**e [*table-name* **|** **all**]

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**restriction** *table-name* **dial-string preference** *preference-number* **pattern** *pattern-string* {**allowed** | **disallowed**} [**insert**]
	
	Example:
	`se-10-0-0-0(config)# restriction msg-notification dial-string preference 2 pattern 91222* disallowed`
	`se-10-0-0-0(config)# restriction msg-notification dial-string preference 2 pattern 91800* allowed insert`
		(Optional) Specifies the dial string that the system uses to verify a phone number assigned to a phone device or numeric pager. Use this command to add a new dial string to the restriction table or to modify an existing dial string.
		• *preference-number*—Order of this string in the restriction table. The system searches the strings in order of preference, starting with 1. Valid values are 1 to 10.
		The default pattern * has preference 1 by default. The administrator can modify this setting.
		• *pattern-string*—Call pattern to be matched. Valid characters are digits 0 to 9, asterisk (*), or dot (.). The table accepts duplicate call patterns.
		The default pattern * cannot be deleted or modified.
		• **allowed**—Permits phone numbers with this pattern to be assigned to message notification devices.
		The default pattern * is **allowed** by default. The administrator can modify this setting.
		• **disallowed**—Prevents phone numbers with this pattern from being assigned to message notification devices.
		• **insert**—(Optional) Inserts the dial string in the proper place in the table. The system increases the preference number of existing strings appropriately. The system displays a system message if the preference number is less than 1 or greater than 10.
		If **insert** is not used, the system replaces any existing dial string with the given preference with this new dial string. The system displays a system message if no existing dial string has the given preference.

	Command or Action	Purpose

Step 3	**`restriction msg-notification min-digits`** *`minimum-digits`*
	Example:
	`se-10-0-0-0(config)# restriction msg-notification min-digits 5`
		(Optional) Specifies the minimum number of digits for a notification phone number. Valid values are 1 to 30. The default is 1.
		This value applies only to phone devices and numeric pagers.

Step 4	**`restriction msg-notification max-digits`** *`maximum-digits`*
	Example:
	`se-10-0-0-0(config)# restriction msg-notification max-digits 12`
		(Optional) Specifies the maximum number of digits for a restricted number. Valid values are 1 to 30. The default is 1. A system message appears if **max-digits** is a smaller value than **min-digits**.
		This value applies only to phone devices and numeric pagers.

Step 5	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Exits to privileged EXEC mode.

Step 6	**`show restriction table`** `[`*`table-name`*`|` **`all`**`]`
	Example:
	`se-10-0-0-0# show restriction table live-reply`
		(Optional) Displays the specified restriction tables.

Examples

To see sample output for the **show restriction-table** *table-name* command, see the "Examples" section on page 37.

CHAPTER 19

Advanced Configuration

This chapter describes advanced configuration procedures for modifying application parameters after the initial installation and configuration process described in the “” section on page 1. That earlier chapter includes commands not described in this chapter.

The advanced configuration procedures include:

- Configuring the Hostname, page 1
- Configuring the DNS Server, page 3
- Configuring NTP Servers, page 4
- Configuring a Syslog Server, page 8
- Configuring the Clock Time Zone, page 10
- Configuring Password and PIN Parameters, page 12
- Cisco Unified CME Password Synchronization in “Configuring Password and PIN Parameters” on page 12
- PINless Voicemail in “Configuring Password and PIN Parameters” on page 12 and in “Displaying Password and PIN System Settings” on page 23.
- Scheduling CLI Commands, page 24

Configuring the Hostname

During the software postinstallation process, the hostname was configured. Use this procedure to change the hostname.

SUMMARY STEPS

1. **config t**
2. **hostname** *hostname*
3. **exit**
4. **show hosts**
5. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.

Step 2	**hostname** *hostname*
	Example:
	`se-10-0-0-0(config)# hostname mainhost`
	`mainhost(config)#`
		Specifies the hostname that identifies the local Cisco Unity Express system. Do not include the domain name as part of the hostname.
		The Cisco Unity Express prompt changes to reflect the hostname. If you do not enter a hostname, the prompt is formed using "se" and the IP address of the Cisco Unity Express network module.

Step 3	**exit** **Example:** `mainhost(config)# exit`	Exits configuration mode.
Step 4	**show hosts** **Example:** `mainhost# show hosts`	Displays the local hostname and DNS servers configured on the system.
Step 5	**copy running-config startup-config** **Example:** `mainhost# copy running-config startup-config`	Copies the configuration changes to the startup configuration.

Examples

The following commands configure the hostname:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# hostname mainhost
ca-west(config)# exit
ca-west#
```

The output from the **show hosts** command might look similar to the following:

```
ca-west# show hosts

Hostname:      mainhost
Domain:        myoffice
DNS Server1:   10.100.10.130
DNS Server2:   10.5.0.0
ca-west#
```

Configuring the DNS Server

During the software postinstallation process, the DNS server and IP addresses may have been configured. Use this procedure to change the server name and IP addresses.

SUMMARY STEPS

1. **config t**
2. **ip domain-name** *dns-server-name*
3. **ip name-server** *ip-address* [*ip-address*] [*ip-address*] [*ip-address*]
4. **exit**
5. **show hosts**
6. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`ip domain-name`** *`dns-server-name`*
	Example:
	`se-10-0-0-0(config)#` **`ip domain-name mycompany.com`**
		Specifies the domain name of the DNS server.

Step 3	**`ip name-server`** *`ip-address`* [*`ip-address`*] [*`ip-address`*] [*`ip-address`*]
	Example:
	`se-10-0-0-0(config)#` **`ip name-server 192.168.0.5`**
	`se-10-0-0-0(config)#` **`ip name-server 192.168.0.5 192.168.0.10 192.168.0.12 192.168.0.20`**
		Specifies up to four IP addresses for the DNS server.

Step 4	**`exit`**
	Example:
	`se-10-0-0-0(config)# exit`
		Exits configuration mode.

Step 5	**`show hosts`**
	Example:
	`se-10-0-0-0# show hosts`
		Displays the IP route destinations, gates, and masks.

Step 6	**`copy running-config startup-config`**
	Example:
	`se-10-0-0-0#` **`copy running-config startup-config`**
		Copies the configuration changes to the startup configuration.

Examples

The following commands configure the DNS server:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# ip domain-name mycompany
se-10-0-0-0(config)# ip name-server 10.100.10.130 10.5.0.0
se-10-0-0-0(config)# exit
se-10-0-0-0#
```

The output from the **show hosts** command might look similar to the following:

```
se-10-0-0-0# show hosts

Hostname:      se-10-100-6-10
Domain:        mycompany
DNS Server1:   10.100.10.130
se-10-0-0-0#
```

Configuring NTP Servers

During the software postinstallation process, the Network Time Protocol (NTP) server may have been configured. Cisco Unity Express accepts a maximum of three NTP servers. Use this procedure to add or delete NTP servers.

Adding NTP Servers

You can designate an NTP server using its IP address or its hostname.

Cisco Unity Express uses the DNS server to resolve the hostname to an IP address and stores the IP address as an NTP server. If DNS resolves the hostname to more than one IP address, Cisco Unity Express randomly chooses one of the IP addresses that is not already designated as an NTP server.

To configure an NTP server with multiple IP addresses for a hostname, repeat the configuration steps using the same hostname. Each iteration assigns the NTP server to its remaining IP addresses.

SUMMARY STEPS

1. **config t**
2. **ntp server** {*hostname* | *ip-address*} [**prefer**]
3. **exit**
4. **show ntp status**
5. show ntp servers
6. show ntp source
7. show ntp association
8. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** se-10-0-0-0# config t	Enters configuration mode.
Step 2	**ntp server** {*hostname* | *ip-address*} [**prefer**] **Example:** se-10-0-0-0(config)# **ntp server 10.0.3.4** se-10-0-0-0(config)# **ntp server 10.0.10.20 prefer**	Specifies the name or IP address of the NTP server. If more than one server is configured, the server with the **prefer** attribute is used first.
Step 3	**exit** **Example:** se-10-0-0-0(config)# exit	Exits configuration mode.
Step 4	**show ntp status** **Example:** se-10-0-0-0# show ntp status	Displays the NTP subsystem status.
Step 5	show ntp servers **Example:** se-10-0-0-0# show ntp servers	Displays a list of Network Time Protocol (NTP) servers and their current states.
Step 6	show ntp source **Example:** se-10-0-0-0# show ntp source	Displays the time source for a Network Time Protocol (NTP) server.
Step 7	show ntp association **Example:** se-10-0-0-0# show ntp association	Displays the association identifier and status for all Network Time Protocol (NTP) servers.
Step 8	**copy running-config startup-config** **Example:** se-10-0-0-0# **copy running-config startup-config**	Copies the configuration changes to the startup configuration.

Examples

The following commands configure the NTP server:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# ntp server 10.100.6.9
se-10-0-0-0(config)# exit
se-10-0-0-0#
```

The following shows sample output from the **show ntp status** command:

```
se-10-0-0-0# show ntp status

NTP reference server 1:       10.100.6.9
Status:                       sys.peer
Time difference (secs):       3.268110099434328E8
Time jitter (secs):           0.1719226837158203
se-10-0-0-0#
```

The following shows sample output from the **show ntp servers** command:

```
se-10-0-0-0# show ntp servers

remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
*10.100.10.65 127.127.7.1    8 u  933 1024  377    0.430   -1.139   0.158
space reject,       x falsetick,       . excess,          - outlyer
+ candidate,        # selected,        * sys.peer,        o pps.peer
```

The following shows sample output from the **show ntp source** command:

```
se-10-0-0-0# show ntp source

127.0.0.1: stratum 9, offset 0.000015, synch distance 0.03047
10.100.10.65: stratum 8, offset -0.001124, synch distance 0.00003
```

The following shows sample output from the **show ntp association** command:

```
se-10-0-0-0# show ntp associations

ind assID status  conf reach auth condition  last_event cnt
===========================================================
  1 37773  9624   yes   yes  none  sys.peer   reachable  2
```

The following example configures an NTP server with a hostname that points to two IP addresses 172.16.10.1 and 172.16.10.2:

```
se-10-0-0-0# config t
se-10-0-0-0(config)# ntp server NTP.mine.com
se-10-0-0-0(config)# exit
se-10-0-0-0#

se-10-0-0-0# config t
se-10-0-0-0(config)# ntp server NTP.mine.com
se-10-0-0-0(config)# exit
se-10-0-0-0#
```

The following shows sample output from the **show ntp status** command:

```
se-10-0-0-0# show ntp status

NTP reference server 1:       172.16.10.1
Status:                       sys.peer
Time difference (secs):       3.268110099434328E8
Time jitter (secs):           0.1719226837158203

NTP reference server 1:       172.16.10.2
Status:                       sys.peer
Time difference (secs):       3.268110099434328E8
Time jitter (secs):           0.1719226837158203
se-10-0-0-0#
```

Removing an NTP Server

Remove an NTP server using its IP address or hostname.

SUMMARY STEPS

1. **config t**
2. **no ntp server** {*hostname* | *ip-address*}
3. **exit**
4. **show ntp status**
5. **show ntp configuration**
6. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`no ntp server`** {*`hostname`* | *`ip-address`*}
	Example:
	`se-10-0-0-0(config)#` **`no ntp server 10.0.3.4`**
	`se-10-0-0-0(config)#` **`no ntp server myhost`**
		Specifies the hostname or IP address of the NTP server to remove.

Step 3	**`exit`**
	Example:
	`se-10-0-0-0(config)# exit`
		Exits configuration mode.

Step 4	**`show ntp status`**
	Example:
	`se-10-0-0-0# show ntp status`
		Displays the NTP subsystem status.

Step 5	**`show ntp configuration`**
	Example:
	`se-10-0-0-0# show ntp configuration`
		Displays the configured NTP servers.

Step 6	**`copy running-config startup-config`**
	Example:
	`se-10-0-0-0#` **`copy running-config startup-config`**
		Copies the configuration changes to the startup configuration.

Displaying NTP Server Information

The following commands are available to display NTP server configuration information and status:

- **show ntp associations**
- **show ntp servers**
- **show ntp source**
- show ntp status

The following is sample output for the **show ntp associations** command:

```
se-10-0-0-0# show ntp associations

ind assID status  conf reach auth condition  last_event cnt
===========================================================
  1 61253  8000   yes   yes  none    reject
```

The following is sample output for the **show ntp servers** command:

```
se-10-0-0-0# show ntp servers

     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
 10.100.6.9       0.0.0.0         16 u    - 1024    0    0.000    0.000 4000.00
space reject,       x falsetick,       . excess,          - outlyer
+ candidate,        # selected,        * sys.peer,        o pps.peer
```

The following is sample output for the **show ntp source** command:

```
se-10-0-0-0# show ntp source

192.168.0.1: stratum 16, offset 0.000013, synch distance 8.67201
0.0.0.0:        *Not Synchronized*
```

The following is sample output for the **show ntp status** command:

```
se-10-0-0-0# show ntp status

NTP reference server :        10.100.6.9
Status:                       reject
Time difference (secs):       0.0
Time jitter (secs):           4.0
```

Configuring a Syslog Server

Cisco Unity Express captures messages that describe activities in the system. These messages are collected and directed to a messages.log file on the Cisco Unity Express module hard disk, the console, or an external system log (syslog) server. The messages.log file is the default destination.

This section describes the procedure for configuring an external server to collect the messages. To view the messages, see "Viewing System Activity Messages" section on page 12.

Required Data for This Procedure

You need the hostname or IP address of the designated log server.

SUMMARY STEPS

1. **config t**
2. **log server address** {*hostname* | *ip-address*}
3. **exit**
4. **show running-config**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`log server address`** {*`hostname`* | *`ip-address`*}
	Example:
	`se-10-0-0-0(config)#` **`log server address 10.187.240.31`**
	`se-10-0-0-0(config)#` **`log server address logpc`**
		Specifies the hostname or IP address of the NTP server designated as the log server.

Step 3	**`exit`**
	Example:
	`se-10-0-0-0(config)# exit`
		Exits configuration mode.

Step 4	**`show running-config`**
	Example:
	`se-10-0-0-0# show running-config`
		Displays the system configuration, which includes the configured log server.

Examples

The output from the **show running-config** command might look similar to the following:

```
se-10-0-0-0# show running-config

clock timezone America/Los_Angeles

hostname se-10-0-0-0

ip domain-name localdomain

ntp server 10.100.60.1
.
.
.
log server address 10.100.10.210

voicemail default mailboxsize 3000
voicemail capacity time 6000

end
```

Configuring the Clock Time Zone

During the software postinstallation process, the time zone of the local Cisco Unity Express module was configured. Use this procedure to change the module's time zone.

Cisco Unity Express automatically updates the clock for daylight savings time on the basis of the selected time zone.

SUMMARY STEPS

1. **config t**
2. **clock timezone** *timezone*
3. **exit**
4. **show clock detail**
5. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** se-10-0-0-0# config t	Enters configuration mode.
Step 2	**clock timezone** *timezone* **Example:** se-10-0-0-0(config)# **clock timezone America/Los_Angeles**	Specifies the local time zone. To enter a value for the *timezone* argument, you must know the phrase that represents your time zone. If you do know the phrase, press **<Enter>**. A series of menus will appear to help you choose the time zone.
Step 3	**exit** **Example:** se-10-0-0-0(config)# exit	Exits configuration mode.
Step 4	**show clock detail** **Example:** se-10-0-0-0# show clock detail	Displays the time zone, clocking resolution, and current clock time.
Step 5	**copy running-config startup-config** **Example:** se-10-0-0-0# **copy running-config startup-config**	Copies the configuration changes to the startup configuration.

Examples

The following commands configure the clock time zone:

```
se-10-0-0-0# config t
```

```
se-10-0-0-0(config)# clock timezone

Please identify a location so that time zone rules can be set correctly.
Please select a continent or ocean.
1) Africa            4) Arctic Ocean     7) Australia       10) Pacific Ocean
2) Americas          5) Asia             8) Europe
3) Antarctica        6) Atlantic Ocean   9) Indian Ocean
#? 2
Please select a country.
 1) Anguilla              18) Ecuador               35) Paraguay
 2) Antigua & Barbuda     19) El Salvador           36) Peru
 3) Argentina             20) French Guiana         37) Puerto Rico
 4) Aruba                 21) Greenland             38) St Kitts & Nevis
 5) Bahamas               22) Grenada               39) St Lucia
 6) Barbados              23) Guadeloupe            40) St Pierre & Miquelon
 7) Belize                24) Guatemala             41) St Vincent
 8) Bolivia               25) Guyana                42) Suriname
 9) Brazil                26) Haiti                 43) Trinidad & Tobago
10) Canada                27) Honduras              44) Turks & Caicos Is
11) Cayman Islands        28) Jamaica               45) United States
12) Chile                 29) Martinique            46) Uruguay
13) Colombia              30) Mexico                47) Venezuela
14) Costa Rica            31) Montserrat            48) Virgin Islands (UK)
15) Cuba                  32) Netherlands Antilles  49) Virgin Islands (US)
16) Dominica              33) Nicaragua
17) Dominican Republic    34) Panama
#? 45
Please select one of the following time zone regions.
 1) Eastern Time
 2) Eastern Time - Michigan - most locations
 3) Eastern Time - Kentucky - Louisville area
 4) Eastern Standard Time - Indiana - most locations
 5) Central Time
 6) Central Time - Michigan - Wisconsin border
 7) Mountain Time
 8) Mountain Time - south Idaho & east Oregon
 9) Mountain Time - Navajo
10) Mountain Standard Time - Arizona
11) Pacific Time
12) Alaska Time
13) Alaska Time - Alaska panhandle
14) Alaska Time - Alaska panhandle neck
15) Alaska Time - west Alaska
16) Aleutian Islands
17) Hawaii
#? 11

The following information has been given:

        United States
        Pacific Time

Therefore TZ='America/Los_Angeles' will be used.
Local time is now:      Tue Jul 18 02:02:19 PDT 2006.
Universal Time is now:  Tue Jul 18 09:02:19 UTC 2006.
Is the above information OK?
1) Yes
2) No
#? 1
Save the change to startup configuration and reload the module for the new timezone to
take effect.
se-10-0-0-0(config)# end
se-10-0-0-0#
```

The output from the **show clock detail** command might look similar to the following:

```
se-10-0-0-0# show clock detail

19:20:33.724 PST Wed Feb 4 2004
time zone:                              America/Pacific
clock state:                            unsync
delta from reference (microsec):        0
estimated error (microsec):             175431
time resolution (microsec):             1
clock interrupt period (microsec):      10000
time of day (sec):                      732424833
time of day (microsec):                 760817
```

Configuring Password and PIN Parameters

Cisco Unity Express supports the configuration of the password and personal identification number (PIN) parameters described in the following sections:

- Configuring Password and PIN Length and Expiry Time, page 12
- Configuring Enhanced PIN Validation, page 14
- Configuring Password and PIN Protection Lockout Modes, page 16
- Configuring PIN and Password History, page 21
- Configuring PIN and Password History, page 21
- Encrypting PINs in Backup Files, page 24
- Displaying Password and PIN System Settings, page 23

Note If you change a Cisco Unified CME user's password on Cisco Unity Express with Configure --> Users, the password for that user is updated on Cisco Unified CME. However, the reverse is not true: a user password changed on Cisco Unified CME will not be updated to Cisco Unity Express.

Note For instructions on configuring PINless voicemail, see "Configuring PINless Mailbox Access" section on page 13.

Configuring Password and PIN Length and Expiry Time

Cisco Unity Express supports configuring the following two attributes of password and PIN:

- Minimum password and PIN length

  To support enhanced security procedures, Cisco Unity Express has made the password and PIN length configurable. The administrator can configure the length to a value greater than or equal to 3 alphanumeric characters. This is a system-wide value, so that all subscribers must have passwords and PINs of at least that many characters. Use the GUI **Defaults > User** option or the procedure described below to configure this length.

  The password length does not have to equal the PIN length.

The default length is 3 alphanumeric characters. The maximum password length is 32 alphanumeric characters. The maximum PIN length is 16 alphanumeric characters.

To set the password or PIN length to the system default values, use the **no** or **default** form of the commands.

Note If the minimum password or PIN length is increased, existing passwords and PINs that do not conform to the new limit will automatically expire. The subscriber must reset the password at the next log in to the GUI and must reset the PIN at the next log in to the TUI.

- Password and PIN expiry time

  Cisco Unity Express permits the administrator to configure the password and PIN expiry time on a system-wide basis. The expiry time is the time, in days, for which the password and PIN are valid. When this time is reached, the subscriber must enter a new password or PIN.

  If this option is not configured, passwords and PINs do not expire.

  Use the GUI **Defaults > User** option or the procedure described below to configure this time.

  The password expiry time does not have to equal the PIN expiry time.

  The valid range is 3 to 365 days.

  To set the password or PIN expiry time to the system default values, use the **no** or **default** form of the commands.

SUMMARY STEPS

- **config t**
- **security password length min** *password-length*
- **security pin length min** *pin-length*
- **security password expiry days** *password-days*
- **security pin expiry days** *pin-days*
- **exit**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
	`se-10-0-0-0(config)#`
		Enters configuration mode.

Step 2	`security password length min` *`password-length`*
	Example:
	`se-10-0-0-0(config)# security password length min 5`
		Specifies the length of all subscribers' passwords. The default minimum value is 3; the maximum value is 32.
		To set the minimum password length to the system default, use the **no** or **default** form of this command.

	Command or Action	Purpose
Step 3	**security pin length min** *pin-length* **Example:** `se-10-0-0-0(config)# security pin length min 4`	Specifies the minimum length of all subscribers' PINs. The default value is 3; the maximum value is 16. To set the minimum PIN length to the system default, use the **no** or **default** form of this command.
Step 4	**security password expiry days** *password-days* **Example:** `se-10-0-0-0(config)# security password expiry days 60`	Specifies the maximum number of days for which subscribers' passwords are valid. Valid values range from 3 to 365. If this value is not configured, the passwords will not expire. To set the password expiry time to the system default, use the **no** or **default** form of this command.
Step 5	**security pin expiry days** *pin-days* **Example:** `se-10-0-0-0(config)# security pin expiry days 45`	Specifies the maximum number of days for which subscriber's PINs are valid. Valid values range from 3 to 365. If this value is not configured, the PINs will not expire. To set the PIN expiry time to the system default, use the **no** or **default** form of this command.

Step 6	**exit**
	Example:
	`se-10-0-0-0(config)# exit`
	`se-10-0-0-0#`
		Exits configuration mode.

Examples

The following example sets the password length to 6 characters, the PIN length to 5 characters, the password expiry time to 60 days, and the PIN expiry time to 45 days.

```
se-10-0-0-0# config t
se-10-0-0-0(config)# security password length min 6
se-10-0-0-0(config)# security pin length min 5
se-10-0-0-0(config)# security password expiry days 60
se-10-0-0-0(config)# security pin expiry days 45
se-10-0-0-0(config)# exit
```

Configuring Enhanced PIN Validation

Starting in release 8.6.4, you can configure an enhanced PIN validation feature, using the **security pin trivialcheck** command.

This feature enforces additional validations for a new PIN requested by a user. When the feature is not enabled, a smaller set of validations is enforced.

Validation	Enforced at all times	Enforced when PIN trivialcheck enabled
PIN cannot contain any other characters other than digits from 0 to 9.	Y	Y
PIN cannot contain digits less than the minimum length of PIN configured.	Y	Y
PIN cannot contain more than maximum length for PIN: 16 digits.	Y	Y
Previous n number of PINs cannot be reused if history depth is set to n.	Y	Y
The PIN cannot match the numeric representation of the first or last name of the user.		Y
The PIN cannot contain the primary or alternate phone extensions of the user.		Y
The PIN cannot contain the reverse of the primary or alternate phone extensions of the user.		Y
The PIN cannot contain groups of repeated digits, such as "408408" or "123123."		Y
The PIN cannot contain only two different digits, such as “121212.”		Y
A digit cannot be used more than two times consecutively, such as “28883.”		Y
The PIN cannot be an ascending or descending group of digits, such as “012345” or “987654.”		Y
The PIN cannot contain a group of numbers that are dialed in a straight line on the keypad when the group of digits equals the minimum credential length that is allowed. For example, if 3 digits are allowed, the user could not use “123,” “456,” or “789” as a PIN.		Y

Prerequisites

Cisco Unity Express 8.6.4 or a later version.

Required Data for This Procedure

None.

SUMMARY STEPS

1. config t
2. security pin trivialcheck

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**security password lockout enable** **Example:** `se-10-0-0-0(config)# security pin trivialcheck`	Enables the PIN trivial check validation feature.

Configuring Password and PIN Protection Lockout Modes

Starting in release 3.0, you can use both temporary and permanent lockout for passwords and PINs to help prevent security breeches.

For permanent lockout mode, the user's account is permanently locked after a specified number of incorrect passwords or PINs are entered. After the account is locked, only the administrator can unlock it and reset the password.

For temporary lockout mode, the user's account is temporarily locked after a specified number of initial incorrect passwords or PINs are entered. This lockout lasts for a specified amount of time. If the maximum number of incorrect passwords or PINs is exceeded for a second time, the account is locked for twice the specified a mount of time. The lockout time continues to increase for each set of incorrect passwords or PINs until the total number of failed login attempts equals the number specified to lock the account permanently. To prevent denial-of-service attacks, the retry count is not incremented if a user tries to log in during the lockout period. If the user enters the correct password or PIN and logs in successfully, the lockout time is reset to zero. After the account is permanently locked, only the administrator can unlock it and reset the password. When the administrator unlocks the account, the retry count and disable time are also reset to zero.

To configure the behavior for permanent lockouts, specify:

- Lockout mode (set to permanent)
- Maximum number of failed login attempts allowed before the account is locked

To configure the behavior for temporary lockouts, specify:

- Lockout mode (set to temporary)
- Number of failed attempts that trigger the initial temporary lockout
- Duration of initial temporary lockout
- Number of failed attempts that will lock the account permanently

You have the following four options when using password and PIN protect:

- Password Protection with:
  - Permanent Lockout
  - Temporary Lockout
- PIN Protection with:
  - Permanent Lockout

- Temporary Lockout

The corresponding procedures are documented in the following sections:

- Configuring Password Protection with Permanent Lockout, page 17
- Configuring PIN Protection with Permanent Lockout, page 18
- Configuring Password Protection with Temporary Lockout, page 19
- Configuring PIN Protection with Temporary Lockout, page 20

Configuring Password Protection with Permanent Lockout

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

None.

SUMMARY STEPS

1. **config t**
2. **security password lockout enable**
3. **security password lockout policy perm-lock**
4. **security password perm-lock max-attempts** *no_of_max_attempts*
5. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**security password lockout enable** **Example:** `se-10-0-0-0(config)# security password lockout enable`	Enables the password lockout feature.
Step 3	**security password lockout policy perm-lock** **Example:** `se-10-0-0-0(config)# security password lockout policy perm-lock`	Sets the security mode to lock out subscribers permanently when the maximum number of failed login attempts is reached.

	Command or Action	Purpose

Step 4	**`security password perm-lock max-attempts`** *`no_of_max_attempts`*
	Example:
	`se-10-0-0-0(config)# security password perm-lock max-attempts 2`
		Specifies the maximum number of failed attempts that trigger a permanent lockout. Range is 1 to 200.

Step 5	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Configuring PIN Protection with Permanent Lockout

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

None.

SUMMARY STEPS

1. **config t**
2. **security pin lockout enable**
3. **security pin lockout policy perm-lock**
4. **security pin perm-lock max-attempts** *no_of_max_attempts*
5. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`security pin lockout enable`**
	Example:
	`se-10-0-0-0(config)# security pin lockout enable`
		Enables the PIN lockout feature.

Step 3	**`security pin lockout policy perm-lock`**
	Example:
	`se-10-0-0-0(config)# security pin lockout policy perm-lock`
		Sets the security mode to lock out subscribers permanently when the maximum number of failed login attempts is reached.

	Command or Action	Purpose
Step 4	**security pin perm-lock max-attempts** *no_of_max_attempts* **Example:** `se-10-0-0-0(config)# security pin perm-lock max-attempts 2`	Specifies the maximum number of failed attempts that trigger a permanent lockout.

Step 5	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Configuring Password Protection with Temporary Lockout

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

None.

SUMMARY STEPS

1. **config t**
2. **security password lockout enable**
3. **security password lockout policy temp-lock**
4. **security password temp-lock max-attempts** *no_of_max_attempts*
5. **security password temp-lock init-attempts** *no_of_init_attempts*
6. **security password temp-lock duration** *duration*
7. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**security password lockout enable** **Example:** `se-10-0-0-0(config)# security password lockout enable`	Enables the PIN lockout feature.

	Command or Action	Purpose
Step 3	**security password lockout policy temp-lock** **Example:** `se-10-0-0-0(config)# security password lockout policy temp-lock`	Set the security mode to lock out subscribers permanently when the maximum number of failed login attempts is reached.
Step 4	**security password temp-lock max-attempts** *no_of_max_attempts* **Example:** `se-10-0-0-0(config)# security password temp-lock init-attempts 8`	Specifies the initial number of failed attempts that trigger a temporary lockout. Range is from the value of *init-attempts* to 200.
Step 5	**security password temp-lock init-attempts** *no_of_init_attempts* **Example:** `se-10-0-0-0(config)# security password temp-lock init-attempts 4`	Specifies the initial number of failed attempts that trigger a temporary lockout. Range is between 1 and the value of *max_attempt*s.
Step 6	**security password temp-lock duration** *duration* **Example:** `se-10-0-0-0(config)# security password temp-lock duration 10`	Specifies the initial lockout duration (in minutes) for a temporary lockout mode. The valid range is TBD.

Step 7	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Configuring PIN Protection with Temporary Lockout

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

None.

SUMMARY STEPS

1. **config t**
2. **security pin lockout enable**
3. **security pin lockout policy temp-lock**
4. **security pin temp-lock max-attempts** *no_of_max_attempts*
5. **security pin temp-lock init-attempts** *no_of_init_attempts*
6. **security pin temp-lock duration** *duration*
7. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`security pin lockout enable`**
	Example:
	`se-10-0-0-0(config)# security pin lockout enable`
		Enables the PIN lockout feature.

Step 3	**`security pin lockout policy temp-lock`**
	Example:
	`se-10-0-0-0(config)# security pin lockout policy temp-lock`
		Set the security mode to lock out subscribers permanently when the maximum number of failed login attempts is reached.

Step 4	**`security pin temp-lock max-attempts`** *`no_of_max_attempts`*
	Example:
	`se-10-0-0-0(config)# security pin temp-lock init-attempts 8`
		Specifies the initial number of failed attempts that trigger a temporary lockout. Range is from the value of *init-attempts* to 200.

Step 5	**`security pin temp-lock init-attempts`** *`no_of_init_attempts`*
	Example:
	`se-10-0-0-0(config)# security pin temp-lock init-attempts 4`
		Specifies the initial number of failed attempts that trigger a temporary lockout. Range is between 1 and the value of *max_attempts*.

Step 6	**`security pin temp-lock duration`** *`duration`*
	Example:
	`se-10-0-0-0(config)# security pin temp-lock duration 10`
		Specifies the initial lockout duration (in minutes) for a temporary lockout mode. The valid range is TBD

Step 7	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Configuring PIN and Password History

Starting in release 3.0, this feature enables the system to track previous PINs and passwords for all users and prevent users from reusing old PINs or passwords. You can configure the depth of the PIN or the password history using either the GUI or CLI.

This section contains these procedures:

- Configuring the Password History Depth, page 22
- Configuring the PIN History Depth, page 22

Configuring the Password History Depth

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

None.

SUMMARY STEPS

1. **config t**
2. **security password history depth** *depth*
3. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	**`security password history depth`** *`depth`*
	Example:
	`se-10-0-0-0(config)# security password history depth 6`
		Forces all users to choose a password that is not in their password history list.

Step 3	**`end`**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Configuring the PIN History Depth

Prerequisites

Cisco Unity Express 3.0 or a later version

Required Data for This Procedure

None.

SUMMARY STEPS

1. **config t**
2. **security pin history depth** *depth*

3. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	`security pin history depth` *`depth`*
	Example:
	`se-10-0-0-0(config)# security pin history depth 6`
		Forces all users to choose a PIN that is not in their password history list.

Step 3	`end`
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Displaying Password and PIN System Settings

Use the following Cisco Unity Express EXEC mode command to display the password and PIN settings:

show security detail

The command output can look similar to the following:

```
se-10-0-0-0# show security detail

Password Expires:         true
Password Age:             60 days
Password Length (min):    5
Password Length (max):    32
PIN Expires:              true
PIN Age:                  45 days
PIN Length (min):         4
PIN Length (max):         16
```

The following example shows the values when password expiration and the PIN length are reset to the system default values:

```
se-10-0-0-0# show security detail

Password Expires:         false
Password Length (min):    3
Password Length (max):    32
PIN Expires:              false
PIN Length (min):         3
PIN Length (max):         16
```

To display PINless voicemail settings, use the following Cisco Unity Express EXEC mode command:

show voicemail detail mailbox [*owner*]

This command will produce output similar to the following, showing one of the three options displayed below:

```
se-10-0-0-0# show voicemail detail mailbox cjwhite
Owner: /sw/local/users/cjwhite
Type: Personal
Description:
Busy state: idle
Enabled: true
Allow login without pin: [no |
yes - from subscriber's phone numbers |
yes - from any phone number]
Mailbox Size (seconds): 3000
Message Size (seconds): 60
Play Tutorial: false
Fax Enabled: true
Space Used (seconds): 12
Total Message Count: 1
New Message Count: 1
Saved Message Count: 0
Future Message Count: 0
Deleted Message Count: 0
Fax Message Count: 0
Expiration (days): 30
Greeting: standard
Zero Out Number:
Created/Last Accessed: Jun 05 2007 17:06:07 PDTumber: 1
```

Encrypting PINs in Backup Files

Before release 3.0, PINs were stored as clear text in LDAP and were therefore visible in the backup file. This is because user PINs are stored in LDAP, which is backed up in LDIF format. This feature applies SHA-1 hash encryption to PINs before storing them in the LDAP database. As a result, when a user logs in to voice mail, the PIN they submit is hashed and compared to the PIN attribute retrieved from the LDAP directory.

To migrate from earlier version, you must convert from a clear PIN to a hashed PIN in the LDAP directory. Typically, you do this immediately after a system upgrade from an earlier version or after a restore operation from an old backup. At this point, the clear PIN is removed from the database and replaced with the encrypted PIN.

Because encryption using SHA-1 is not reversible, after the conversion is complete, you cannot disable or turn off this feature to restore the encrypted PIN to its clear form.

Note This feature does not require any configuration using the GUI or CLI.

Scheduling CLI Commands

Beginning in Cisco Unity Express 8.0, you can schedule the execution of a block of CLI commands. Blocks of commands are entered interactively, using a symbol delimiter character to start and stop the execution. The execution of the block of commands begins in EXEC mode, but mode-changing commands are allowed in the command block.

The following limitations apply in Cisco Unity Express 8.0:

- The maximum size of the block of commands is 1024 characters ,including new lines.

- Commands in the block cannot use the comma “,” character or the delimiter character. For example, if the delimiter character is configured to be “#”, then that character cannot be used in the command blocks.
- Only system administrators can schedule the execution of blocks of commands.
- CLI commands are executed under system super-user privileges.
- Notification for the execution of these command blocks is not available. Error messages and results are available in log files only.

Caution Use caution when scheduling CLI commands. Interactive commands will cause the execution to hang. Some commands might cause system instability.

Prerequisites

Cisco Unity Express 8.0 or a later version

Required Data for This Procedure

None.

SUMMARY STEPS

1. **kron schedule** [*name*]
2. **description**
3. repeat every {*number* **days at** *time* |*number* **weeks on** *day* | *number* **months on day** *date* | *number* **years on month** *month*} at *time*

Note Instead of the **repeat every** command, you can optionally use one of the following commands:

- **repeat once at** *time*
- **repeat daily at** *time*
- **repeat monthly on day** *date* **at** *time*
- **repeat weekly on** *day* **at** *time*
- **repeat yearly on month** *month* **at** *time*

4. start-date *date*
5. stop-date *date*
6. commands *delimiter*
7. exit
8. show kron schedules
9. show kron schedule detail job

DETAILED STEPS

	Command or Action	Purpose
Step 1	**kron schedule** [*name*] **Example:** se-10-0-0-0# kron schedule kron1011	Enters kron schedule configuration mode.
Step 2	**description** *description* **Example:** se-10-0-0-0(kron-schedule)# description backup	(Optional) Enters a description for the scheduled kron job.
Step 3	**repeat every** {*number* **days** |*number* **weeks on** *day* | *number* **months on day** *date* | *number* **years on month** *month*} **at time** *time* **Example:** se-10-0-0-0(kron-schedule)# repeat every 2 days at time 10:00	Specifies how often a recurring scheduled kron job occurs. To configure a one-time kron job, use the **repeat once** command. You can also optionally use one of the other **repeat** commands listed in the previous note.
Step 4	**start-date** *date* **Example:** se-10-0-0-0(kron-schedule)# start-date 05/30/2009	Specifies the start date for the recurring scheduled kron job to occur.
Step 5	**stop-date** *date* **Example:** se-10-0-0-0(kron-schedule)# stop-date 10/20/2009	Specifies the stop date for the recurring scheduled kron job to occur.
Step 6	**commands** *delimiter* **Example:** se-10-0-0-0(kron-schedule)# commands % **Enter CLI commands to be executed. End with the character ‘%’. Maximum size is 1024 characters, it may not contain symbol %.** %show version show running-config config t hostname aaa % se-10-0-0-0(kron-schedule)#	Enters an interactive mode where commands in the the command block can be entered for the scheduled kron job. Use the delimiter character to delimit the command block. **Note** Any symbol can be a delimiter. The “%” symbol is shown for example purposes only.
Step 7	exit	Exits kron schedule configuration mode.

	Command or Action	Purpose

Step 8	`show kron schedules`
	Example:
	`se-10-0-0-0# show kron schedule`
		Displays a list of scheduled kron jobs.

Step 9	`show kron schedule detail job` *`name`*
	Example:
	`se-10-0-0-0# show kron schedule detail job kron1011`
		Displays information about a specific scheduled kron job.

Examples

The following is sample output from the **show kron schedules** command:

```
se-10-0-0-0# show kron schedules
Name          Schedule                            Commands
krj1          Every 1 days at 12:34               show ver,sh run,conf t,host...
Total: 1
```

The following is sample output from the **show kron schedule detail job** command:

```
se-10-0-0-0# show kron schedule detail job krj1
Job Name        krj1
Description
Schedule        NOT SET
Last Run        NEVER
Last Result
Next Run        NEVER
Active          from Feb 15, 2010 until INDEFINITE
Disabled
CLI Commands
                show ver
                sh run
                conf t
                hostname aaa
se-10-0-0-0#
```

Monitoring the System

This chapter contains procedures for monitoring the Cisco Unity Express system's health and performance and includes the following sections:

- Monitoring Active Calls, page 1
- Monitoring Future Messages, page 6
- Monitoring Active IMAP and VoiceView Express Sessions, page 7
- Monitoring Queues, page 9
- Displaying SNMP and Management Data Activity, page 10
- Viewing System Activity Messages, page 12
- Checking AIM Compact Flash Memory Wear Activity, page 13
- Viewing Historical Reports, page 13
- Viewing Real Time Reports, page 13

Monitoring Active Calls

This section describes the commands that permit monitoring of active calls on the Cisco Unity Express system and contains the following sections:

- Displaying Active Calls by Application, page 1
- Displaying Active Calls by Route, page 3
- Displaying Incoming Fax Calls, page 5
- Terminating an Active Call, page 5

Displaying Active Calls by Application

To display active calls by application, use the following command in Cisco Unity Express EXEC mode:

show ccn call application [**all** [**subsystem** {**jtapi** | **sip**}] |
application-name [**subsystem** {**jtapi** | **sip**}]]

where **all** displays active calls for all applications, *application-name* displays active calls for the specified application, and **jtapi** and **sip** display active calls for those subsystems.

The command displays information about the port, the call, and the media.

The following is sample output for the **show ccn call application** command:

```
se-10-0-0-0# show ccn call application voicemail

Active Call Details for Subsystem :SIP
-----------------------------------------


 **** Details for route ID :1200 ****
 -------------------------------------


    ** Active Port #1:Call and Media info **
    ------------------------------------------

Port ID :4
Port Impl ID :16904
Port State :IN_USE
Call Id :241
Call Impl Id :FFCE47C8-669711D6-8C4BF237-80EC4A17@10.4.39.35
Call State :CALL_ANSWERED
Call active time(in seconds) :1
Application Associated :voicemail
Application Task Id :17000000122
Called Number :1200
Dialed Number :
Calling Number :1005
ANI :
DNIS :
CLID :sip:1005@10.4.39.35
Arrival Type :DIRECT
Last Redirected Number :
Original Called Number :
Original Dialed Number :

Media Id :6
Media State :IN_USE
Media Destination Address :10.4.39.35
Media Destination Port :16970
Destination Size :20
Destination Payload :G711ULAW64K
Media Source Address :10.4.39.135
Media Source Port :16904
Source Size :30
Source Payload :G711ULAW64K

se-10-0-0-0# show ccn call application promptmgmt

Active Call Details for Subsystem :SIP
-----------------------------------------

 **** Details for route ID :1202 ****
 -------------------------------------

    ** Active Port #1:Call and Media info **
    ------------------------------------------

Port ID :3
Port Impl ID :16902
Port State :IN_USE
Call Id :242
Call Impl Id :92023CF-669811D6-8C50F237-80EC4A17@10.4.39.35
Call State :CALL_ANSWERED
Call active time(in seconds) :1
```

```
Application Associated :promptmgmt
Application Task Id :17000000123
Called Number :1202
Dialed Number :
Calling Number :1005
ANI :
DNIS :
CLID :sip:1005@10.4.39.35
Arrival Type :DIRECT
Last Redirected Number :
Original Called Number :
Original Dialed Number :

Media Id :5
Media State :IN_USE
Media Destination Address :10.4.39.35
Media Destination Port :18534
Destination Size :20
Destination Payload :G711ULAW64K
Media Source Address :10.4.39.135
Media Source Port :16902
Source Size :30
Source Payload :G711ULAW64K
```

Displaying Active Calls by Route

Cisco Unity Express supports displaying active calls by route. (A route is a trigger number configured for an application. Use the **show ccn trigger** command to display a list of configured triggers.)

To display active calls by route, use the following command in Cisco Unity Express EXEC mode:

> **show ccn call route** [**all** [**subsystem** {**jtapi** | **sip**}] | *route-address* [**subsystem** {**jtapi** | **sip**}]]

where **all** displays active calls for all applications, *route-address* displays active calls for the specified route, and **jtapi** and **sip** display active calls for those subsystems.

The command displays information about the port, the call, and the media for both JTAPI and SIP subsystems.

The following example is sample output for the **show ccn call route all** command:

```
se-10-0-0-0# show ccn call route all

Active Call Details for Subsystem :JTAPI
-----------------------------------------

 **** Details for route ID :2200 ****
 -------------------------------------

    ** Active Port #1:Call and Media info **
    ------------------------------------------

Port ID :2
Port Impl ID :2225550100
Port State :IN_USE
Call Id :9
Call Impl Id :1566/1
Call State :CALL_ANSWERED
Call active time(in seconds) :6
Application Associated :voicemail
Application Task Id :17000000010
Called Number :2200
```

```
Dialed Number :
Calling Number :2001
ANI :
DNIS :
CLID :
Arrival Type :DIRECT
Last Redirected Number :
Original Called Number :2200
Original Dialed Number :

Media Id :2
Media State :IN_USE
Media Destination Address :172.16.59.11
Media Destination Port :22814
Destination Size :20
Destination Payload :G711ULAW64K
Media Source Address :10.4.14.133
Media Source Port :16388
Source Size :20
Source Payload :G711ULAW64K

    ** Active Port #2:Call and Media info **
    ------------------------------------------

Port ID :1
Port Impl ID :2225550150
Port State :IN_USE
Call Id :10
Call Impl Id :1567/1
Call State :CALL_ANSWERED
Call active time(in seconds) :6
Application Associated :voicemail
Application Task Id :17000000011
Called Number :2200
Dialed Number :
Calling Number :2003
ANI :
DNIS :
CLID :
Arrival Type :DIRECT
Last Redirected Number :
Original Called Number :2200
Original Dialed Number :

Media Id :1
Media State :IN_USE
Media Destination Address :172.16.59.12
Media Destination Port :27928
Destination Size :20
Destination Payload :G711ULAW64K
Media Source Address :10.4.14.133
Media Source Port :16386
Source Size :20
Source Payload :G711ULAW64K
```

The following example displays active calls for the route 1200, which is a trigger number for the voice-mail application.

```
se-10-0-0-0# show ccn call route 1200

Active Call Details for Subsystem :SIP
-----------------------------------------
```

```
 **** Details for route ID :1200 ****
 -------------------------------------

    ** Active Port #1:Call and Media info **
    ------------------------------------------

Port ID :8
Port Impl ID :16912
Port State :IN_USE
Call Id :246
Call Impl Id :E682B0A9-673311D6-8C64F237-80EC4A17@10.4.39.35
Call State :CALL_ANSWERED
Call active time(in seconds) :0
Application Associated :voicemail
Application Task Id :17000000127
Called Number :1200
Dialed Number :
Calling Number :1005
ANI :
DNIS :
CLID :sip:1005@10.4.39.35
Arrival Type :DIRECT
Last Redirected Number :
Original Called Number :
Original Dialed Number :

Media Id :1
Media State :IN_USE
Media Destination Address :10.4.39.35
Media Destination Port :18812
Destination Size :20
Destination Payload :G711ULAW64K
Media Source Address :10.4.39.135
Media Source Port :16912
Source Size :30
Source Payload :G711ULAW64K
```

Displaying Incoming Fax Calls

To display a list of incoming fax calls when incoming calls are recorded, use the **show ccn call fax incoming** command in Cisco Unity Express EXEC mode. This command displays the connection time, sender's phone number, and the receiver's phone number for all the incoming fax sessions.

The following example is sample output for the **show ccn call fax incoming** command:

```
se-10-0-0-0> show ccn call fax incoming
Connect Time                  Sender              Receiver
=======================================================================
Mon Jan 15 12:56:26 PST 2007  1111                5000
1 incoming fax call(s)
```

Terminating an Active Call

An active call can be terminated by using the call's implementation ID or using the implementation ID of the port through which the call came in to the system. Use the **show ccn call route** command to obtain the call or port implementation ID. See "Displaying Active Calls by Route" on page 3.

To terminate an active call, use the following command in Cisco Unity Express EXEC mode:

ccn call terminate {**callimplid** | **portimplid**} *impli-id*

where *impli-id* is the implementation ID of the call or port.

The following example terminates a call with implementation ID 1567/1:

```
se-10-0-0-0# ccn call terminate call 1567/1
```

The following example terminates a call coming through a port with implementation 2225550150:

```
se-10-0-0-0# ccn call terminate port 2225550150
```

Monitoring Future Messages

Monitoring future messages involves the following procedures:

- Displaying Future Messages, page 6
- Deleting a Future Message, page 7

For a description of future messages, see "Configuring the Delivery of Future Messages" on page 21.

Displaying Future Messages

You can use several CLI commands to display information about future messages.

Displaying All Future Messages

To display details of all messages scheduled for future delivery, use the **show voicemail messages future** command in Cisco Unity Express EXEC mode.

The following is sample output for the command:

```
se-10-0-0-0# show voicemail messages future

Message ID:      JMX0637L023-NM-FOC08221WRB-731357131983
Sender:          User1
Recipient(s):    UserA
Length(sec):     30
Delivery time:   Mon, 11 April 2006 08:0000-0800 (PST)

Message ID:      JMX0637L023-NM-FOC08221WRB-731183375855
Sender:          User2
Recipient(s):    UserB,UserG
Length(sec):     20
Delivery time:   Wed, 13 April 2006 10:15:00-0800 (PST)
```

Displaying the Number of Future Messages for Each Subscriber

To display the number of messages scheduled for future delivery for each subscriber, use the **show voicemail mailboxes** command in Cisco Unity Express EXEC mode.

The following is sample output for the command:

```
se-10-0-0-0# show voicemail mailboxes
```

```
OWNER                   MSGS NEW SAVE DEL BCST  FUTR    MSGTIME   MBXSIZE  USED
''user1''                25   25   0    0   0     1       2952      3000     98 %
''user2''                 5    1   4    0   0     0       1933      3000     64 %
''user3''                 5    5   0    0   0     2       893       3000     30 %
''user4''                 5    5   0    0   0     1       893       3000     30 %
''user8''                 5    5   0    0   0     1       893       3000     30 %
''user9''                 5    5   0    0   0     0       893       3000     30 %
```

Displaying the Number of Scheduled Messages for a Subscriber

To display the number of scheduled messages for a specific subscribe, use the **show voicemail detail mailbox** command in Cisco Unity Express EXEC mode.

The following is sample output for the command:

```
se-10-0-0-0# show voicemail detail mailbox user2

Owner:                                  /sw/local/users/user2
Type:                                   Personal
Description:
Busy state:                             idle
Enabled:                                true
Mailbox Size (seconds):                 3927
Message Size (seconds):                 60
Play Tutorial:                          true
Space Used (seconds):                   60
Total Message Count:                    14
New Message Count:                      1
Saved Message Count:                    2
Future Message Count:                   2
Deleted Message Count:                  9
Expiration (days):                      30
Greeting:                               standard
Zero Out Number:
Created/Last Accessed:                  Jan 23 2006 13:41:31 PST
```

Deleting a Future Message

To delete a message scheduled for future delivery, use the following command in Cisco Unity Express EXEC mode:

voicemail message future *message-id* **delete**

where *message-id* is the message ID of the scheduled message. Use the **show voicemail messages future** command to display the message IDs of the scheduled messages.

An error message appears if *message-id* does not exist or if *message-id* does not belong to a message scheduled for future delivery.

The following example deletes a future message:

```
se-10-0-0-0# voicemail message future JMX0637L023-NM-FOC08221WRB-731357131983 delete
```

Monitoring Active IMAP and VoiceView Express Sessions

Several CLI commands are available for monitoring active IMAP and VoiceView Express sessions:

- Displaying IMAP Sessions, page 8

- Displaying VoiceView Express Sessions, page 8
- Terminating an Active VoiceView Express Session, page 8

Displaying IMAP Sessions

To display status information about active Internet Mail Access Protocol (IMAP) sessions, use the **show imap sessions** command in Cisco Unity Express EXEC mode.

The following is sample output for the command:

```
se-10-0-0-0# show imap sessions

Sessions     IP Address     Connect Time                User ID
===================================================================
  1          10.21.82.244   Wed Nov 16 01:35:02 CST 2005   user1
  2          172.18.10.10   Wed Nov 16 03:23:15 CST 2005   user5
```

Note This command is not available on the AIM-CUE/AIM2-CUE.

Displaying VoiceView Express Sessions

To display status information about active VoiceView Express sessions, use the **show voiceview sessions** command in Cisco Unity Express EXEC mode.

The following is sample output for the command:

```
se-10-0-0-0# show voiceview sessions

Mailbox      RTP     User ID      Phone MAC Address
1013         Yes     user1        0015.C68E.6C1E
1016         No      user5        0015.629F.8706
1015         No      user3        0015.63EE.3790
1014         Yes     user6        0015.629F.888B

4 session(s)
```

2 active RTP stream(s)

Note This command is not available on the AIM-CUE/AIM2-CUE.

Terminating an Active VoiceView Express Session

To terminate an active VoiceView Express session, use the following command in Cisco Unity Express EXEC mode:

service voiceview session terminate *mailbox-id*

where *mailbox-id* is the ID of the mailbox that has the active VoiceView Express session.

The following example terminates a VoiceView Express session for mailbox ID user 3:

```
se-10-0-0-0# service voiceview session terminate mailbox user3
```

Additionally, a new TUI or VoiceView Express session preempts and terminates an existing VoiceView Express session.

Monitoring Queues

Several CLI commands are available for monitoring Cisco Unity Express queues:

- Monitoring Network Queues, page 9
- Monitoring Notification Queues, page 9
- Monitoring Fax Queues, page 10

Monitoring Network Queues

To display status information about network queues, use the **show network queues** command in Cisco Unity Express EXEC mode.

The following example shows output from the command:

```
se-10-0-0-0# show network queues

Running Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
107   VPIM 06:13:26   20    jennifer        1001@sjc.mycompany.com
106   VPIM 06:28:25   20    jennifer        1001@sjc.mycompany.com

Urgent Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
123   VPIM 16:33:39   1     andy            9003@lax.mycompany.com

Normal Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
122   VPIM 16:33:23   1     andy            9001@lax.mycompany.com
124   VPIM 16:34:28   1     andy            9003@lax.mycompany.com
125   VPIM 16:34:57   1     andy            9002@lax.mycompany.com
```

Monitoring Notification Queues

To display status information about message notification queues, use the following command in Cisco Unity Express EXEC mode:

show voicemail notification queue {**email** | **phone**}

where **email** displays details about the e-mail queue, and **phone** displays details about the phone notification queue.

The following example shows output from two version of the **show voicemail notification queue** command:

```
se-10-0-0-0# show voicemail notification queue email
```

```
OWNER          DEVICE TYPE        TIME
user1          Text Pager         723232
user1          Email inbox        2323343

se-10-0-0-0# show voicemail notification queue phone

OWNER          DEVICE TYPE        TIME
user1          Numeric Pager      342343
```

After a job enters one of the queues, you cannot delete the job. The system deletes the job after the notification is sent.

Monitoring Fax Queues

Faxes are always sent in queued mode.To display the fax queue for Cisco Unity Express IVR, use the **show ccn subsystem fax outbound fax** command in Cisco Unity Express IVR user EXEC mode.

The following example shows sample output from the command:

```
se-10-0-0-0> show ccn subsystem fax outbound queue
============================================================================
Fax ID    Recipient      Subject                          Retry     Scheduled
                                                          Count     Send Time
============================================================================
15        9784551212     subject of Fax - max 30 char     1         2007/05/30 10:52:00
```

Displaying SNMP and Management Data Activity

If you have not configured Simple Network Management Protocol (SNMP) monitoring on the Cisco Unity Express system, see the procedure in the "Configuring SNMP Monitoring" section on page 1.

Use the following **trace** commands in Cisco Unity Express EXEC mode to display the SNMP and management data activity:

- **trace snmp** {**agent all** | **agent debug** | **all**}—Enables tracing of SNMP activities.
- **trace management** {**agent all** | **agent debug** | **all**}—Enables tracing of management data requests.

The following examples show sample output for these commands:

```
se-10-0-0-0# trace snmp agent all
se-10-0-0-0# show trace buffer tail

4280 06/03 10:10:31.035 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxPercentTimeUsed,0) = cueMboxPercentTimeUsed
4280 06/03 10:10:31.100 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfMessages,1)
4280 06/03 10:10:31.100 snmp agnt 1
com.cisco.aesop.mgmt.snmp.MBeanUtil.invoke(Voicemail:name=Stats,MboxStatsTableValue,
<parms>,<signature>)
4280 06/03 10:10:31.109 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfMessages,1) = cueMboxNumberOfMessages
4280 06/03 10:10:31.171 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfMessages,0)
```

```
4280 06/03 10:10:31.171 snmp agnt 1
com.cisco.aesop.mgmt.snmp.MBeanUtil.invoke(Voicemail:name=Stats,MboxStatsTableValue,
<parms>,<signature>)
4280 06/03 10:10:31.180 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfMessages,0) = cueMboxNumberOfMessages
4280 06/03 10:10:31.241 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfNewMessages,1)
4280 06/03 10:10:31.241 snmp agnt 1
com.cisco.aesop.mgmt.snmp.MBeanUtil.invoke(Voicemail:name=Stats,MboxStatsTableValue,
<parms>,<signature>)
4280 06/03 10:10:31.250 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfNewMessages,1) = cueMboxNumberOfNewMessages
4280 06/03 10:10:31.313 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfNewMessages,0)
4280 06/03 10:10:31.313 snmp agnt 1
com.cisco.aesop.mgmt.snmp.MBeanUtil.invoke(Voicemail:name=Stats,MboxStatsTableValue,
<parms>,<signature>)
4280 06/03 10:10:31.322 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfNewMessages,0) = cueMboxNumberOfNewMessages
4280 06/03 10:10:31.384 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfSavedMessages,1)
4280 06/03 10:10:31.385 snmp agnt 1
com.cisco.aesop.mgmt.snmp.MBeanUtil.invoke(Voicemail:name=Stats,MboxStatsTableValue,
<parms>,<signature>)
4280 06/03 10:10:31.393 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfSavedMessages,1) =cueMboxNumberOfSavedMessages
4280 06/03 10:10:31.454 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfSavedMessages,0)
4280 06/03 10:10:31.455 snmp agnt 1
com.cisco.aesop.mgmt.snmp.MBeanUtil.invoke(Voicemail:name=Stats,MboxStatsTableValue,
<parms>,<signature>)
4280 06/03 10:10:31.463 snmp agnt 1
com.cisco.aesop.mgmt.snmp.SnmpNative.SnmpTableGetLong(CISCO-UNITY-EXPRESS-MIB,cueMboxTable
,cueMboxNumberOfSavedMessages,0) =cueMboxNumberOfSavedMessages


se-10-0-0-0# trace management agent all
se-10-0-0-0# show trace buffer tail

087 06/03 10:18:42.523 mgmt agnt 1
com.cisco.aesop.mgmt.voicemail.JTAPI.getJTAPConnectionStatus out
087 06/03 10:18:42.523 mgmt agnt 1
com.cisco.aesop.mgmt.voicemail.VoiceConnectivity.getUpdateStatus in
087 06/03 10:18:42.523 mgmt agnt 1 com.cisco.aesop.mgmt.voicemail.VoiceConnectviity.update
in
087 06/03 10:18:42.524 mgmt agnt 1
com.cisco.aesop.mgmt.voicemail.VoiceConnectivity.udpateTables in
087 06/03 10:18:42.525 mgmt agnt 1
com.cisco.aesop.mgmt.SysdbUtil.get(/sw/protorbcp,device)
087 06/03 10:18:42.526 mgmt agnt 1
com.cisco.aesop.mgmt.SysdbUtil.get(/hw/eth/eh0,ip,addrdefault)
087 06/03 10:18:42.529 mgmt agnt 1
com.cisco.aesop.mgmt.voicemail.JTAPIUtil.gettapiPortStatus in
087 06/03 10:18:42.574 mgmt agnt 1
com.cisco.aesop.mgmt.voicemail.JTAPIUtil.gettapiPortStatus {3504={id=3, implid=3504,
state=IDLE}, 3503={id=0, implid=3503,tate=IDLE}, 3502={id=1, implid=3502, state=IDLE},
3500={id=2, implid=3500, stat=IDLE}}
087 06/03 10:18:42.574 mgmt agnt 1
com.cisco.aesop.mgmt.voicemail.JTAPIUtil.gettapiPortStatus out
087 06/03 10:18:42.576 mgmt agnt 1
com.cisco.aesop.mgmt.SysdbUtil.get(/sw/apps/f/ccnapps/configurations/craAesop/ccnwfapp,wfj
tapi,ciscoccnatcallmanager)
087 06/03 10:18:42.581 mgmt agnt 1 com.cisco.aesop.mgmt.voicemail.JTAPIUtil.getctiveCCM in
087 06/03 10:18:42.581 mgmt agnt 1
com.cisco.aesop.mgmt.SysdbUtil.get(/sw/limit,global,applicationMode)
087 06/03 10:18:42.602 mgmt agnt 1 com.cisco.aesop.mgmt.voicemail.JTAPIUtil.getctiveCCM
out
087 06/03 10:18:42.604 mgmt agnt 1
com.cisco.aesop.mgmt.SysdbUtil.get(/sw/apps/f/ccnapps/configurations/craAesop/ccnwfapp,wfs
ip,providerHostname)
087 06/03 10:18:42.607 mgmt agnt 1
com.cisco.aesop.mgmt.SysdbUtil.get(/sw/apps/f/ccnapps/configurations/craAesop/ccnwfapp,wfs
ip,providerHostname)
087 06/03 10:18:42.610 mgmt agnt 1
com.cisco.aesop.mgmt.SysdbUtil.get(/sw/apps/f/ccnapps/configurations/craAesop/ccnwfapp,wfs
ip,providerPortnumber)
087 06/03 10:18:42.614 mgmt agnt 1
com.cisco.aesop.mgmt.SysdbUtil.get(/sw/limit,global,applicationMode)
087 06/03 10:18:42.615 mgmt agnt 1
com.cisco.aesop.mgmt.voicemail.VoiceConnectivity.udpateTables out
087 06/03 10:18:42.615 mgmt agnt 1 com.cisco.aesop.mgmt.voicemail.VoiceConnectivity.update
out
087 06/03 10:18:42.616 mgmt agnt 1
com.cisco.aesop.mgmt.voicemail.VoiceConnectivity.getUpdateStatus out
```

Viewing System Activity Messages

Cisco Unity Express captures messages that describe activities in the system.

If you have not configured a syslog server, see the “Configuring a Syslog Server” section on page 8 for the procedure.

The system activities are categorized into four levels of severity depending on their impact on the system’s functioning:

- Information—The message describes normal system activity, including debug, information, and notice messages.
- Warning—The message is an alert that a non-normal activity is occurring. The Cisco Unity Express system continues to function.
- Error—The message indicates that a system error has occurred. The Cisco Unity Express system may or may not have stopped functioning.
- Fatal—The message describes a critical, alert, or emergency situation with the system. The Cisco Unity Express system has stopped functioning.

These messages are collected and directed to three possible destinations:

- messages.log file—This option is the default. The file contains all system messages and resides on the Cisco Unity Express module hard disk. You can view them on the console or copy them to a server to review for troubleshooting and error reporting.
- Console—View the system messages as they occur with the **log console info** command.
- External system log (syslog) server—Cisco Unity Express copies the messages to another server and collects them in a file on that server’s hard disk. The syslog daemon configuration on the external server determines which directory will save the messages log.

The external server must be configured to listen for User Datagram Protocol (UDP) on port 514 from the IP address of the Cisco Unity Express module.

Checking AIM Compact Flash Memory Wear Activity

Cisco Unity Express tracks the use and wear of the AIM compact flash memory as log and trace data are saved to the module. To display this data, use the **show interface ide 0** command in Cisco Unity Express EXEC mode.

show interface ide 0

The following is sample output:

```
se-10-0-0-0# show interface ide 0

IDE hd0 is up, line protocol is up
     3496 reads, 46828544 bytes
     0 read errors
     9409 write, 137857024 bytes
     0 write errors
     0.0993% worn
```

Viewing Historical Reports

The Historical Reporting feature enables you to save information and statistics related to call and application events in a historical reporting database on the module. You can use this historical data later to generate various types of usage reports, using the Cisco Unified Communications Express Historical Reporting Client.

For information on how to configure Historical Reporting, see the "Configuring Historical Reporting" section on page 63.

To view historical reports, use the **Administration > Historical Reporting** option of the GUI. For instructions about using the Cisco Unified Communications Express Historical Reporting Client, see the G online help for the GUI.

Note To use the Historical Reporting feature, users must have their privileges set to **ViewHistoricalReports**.

Viewing Real Time Reports

The Real Time Reports feature enables you to view real-time statistics for various call-related and application-related events.

To view real-time reports, use the **Reports > Real Time Reports** option of the GUI. For more information about real-time reports, see the online help for the GUI.

Note To view Real Time Reports, users must have their privileges set to **ViewRealtimeReports**.

Configuring SNMP Monitoring

This chapter describes the procedures for configuring Simple Network Monitoring Protocol (SNMP) on the Cisco Unity Express module to monitor the system's health, conduct performance monitoring, collect data, and manage traps for Cisco Unity Express voicemail and auto attendant applications.

See the *Cisco Unity Express SNMP MIB Release 2.2* guide for details about the CISCO-UNITY-EXPRESS-MIB.

The system monitoring commands are not available through the Cisco Unity Express graphical user interface (GUI).

This chapter contains the following sections:

Prerequisites for Implementing SNMP Monitoring on Cisco Unity Express

See the *Cisco Unity Express SNMP MIB Release 2.2* guide for details about installing the CISCO-UNITY-EXPRESS-MIB on the Cisco Unity Express module.

Enabling the SNMP Agent, Passwords, and Trap Server

Activating the SNMP system monitoring on Cisco Unity Express requires the following tasks:

- Enabling the SNMP agent.
- Specifying the SNMP notification passwords.
- Specifying at least one host server that will receive the notifications.

Prerequisites

Be sure that the appropriate MIBs are installed. See the *Cisco Unity Express SNMP MIB Release 2.2* guide for details.

Required Data for This Procedure

- Passwords that permit subscribers to retrieve and change SNMP information. Specify whether these passwords will have read-only or read-write privileges. The system supports a maximum of 5 read-only and 5 read-write passwords. Each password may have a maximum of 15 alphanumeric characters, including letters A to Z, letters a to z, digits 0 to 9, underscore (_), and hyphen (-).
- IP address and password of the host server that will receive the SNMP information. If no host is defined, the system discards the trap information. The system supports a maximum of 5 servers. The password does not have to be the same as the subscriber passwords.

  No host is considered the primary host. The system sends the SNMP notifications to all enabled hosts.
- (Optional) Server contact and location information.

SUMMARY STEPS

1. **config t**
2. **snmp-server community** *community-string* {**ro** | **rw**}
3. **snmp-server enable traps**
4. **snmp-server host** *host-ipaddress community-string*
5. (Optional) **snmp-server contact** *contact-string*
6. (Optional) **snmp-server location** *location-string*
7. **end**
8. **copy running-config startup-confi**g

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.

Step 2	**snmp-server community** *community-string* {**ro** | **rw**}
	Example:
	`se-10-0-0-0(config)# snmp-server community myaccess rw`
	`se-10-0-0-0(config)# snmp-server community youraccess ro`
		Enables the SNMP agent and defines SNMP passwords.
		• *community-string*—Specifies an SNMP password. The maximum length is 15 alphanumeric characters, which includes letter A to Z, letters a to z, digits 0 to 9, underscore (_), and hyphen (-). The first character does not have to be a letter.
		• **ro**—The password has read-only capability. The system supports a maximum of 5 **ro** passwords.
		• **rw**—The password has read and write capabilities. The system supports a maximum of 5 **rw** passwords.

Step 3	**snmp-server enable traps** **Example:** `se-10-0-0-0(config)# snmp-server enable traps`	Enables SNMP traps. SNMP traps are disabled by default. Use this command in conjunction with the **snmp-server host** command to identify at least one server that will receive the SNMP notifications.

Step 4	**snmp-server host** *host-ipaddress community-string*
	Example:
	`se-10-0-0-0(config)# snmp-server host 172.16.100.10 iminhere`
	`se-10-0-0-0(config)# snmp-server host 172.16.100.20 bigtraps`
	`se-10-0-0-0(config)# snmp-server host 172.16.100.30 traps4cue`
		Specifies a server that accepts the SNMP notifications.
		• *host-ipaddress*—IP address of the server. Enable at least one host. The system supports a maximum of 5 hosts.
		• *community-string*—Specifies an SNMP password. The maximum length is 15 alphanumeric characters. This password does not have to be the same as those defined with the **snmp-server community** command.

Step 5	**snmp-server contact "***contact-string***"** **Example:** `se-10-0-0-0(config)# snmp-server contact "Dial 71111 for system operator"`	(Optional) Specifies SNMP server contact information. Maximum length is 31 alphanumeric characters. This value sets the MIB's sysContact string. Enclose the text in double quotes (" ").

	Command or Action	Purpose
Step 6	**snmp-server location "***location-string***"** **Example:** `se-10-0-0-0(config)# snmp-server location "Bldg A NYC"`	(Optional) Specifies SNMP server location information. Maximum length is 31 alphanumeric characters. This value sets the MIB's sysLocation string. Enclose the text in double quotes (" ").

Step 7	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits configuration mode.

Step 8	**copy running-config startup-config** **Example:** `se-10-0-0-0# copy running-config startup-config`	Saves the configuration changes.

Verifying the Enabling of the SNMP Agent, Passwords, and Trap Server

Use the **show snmp configuration** command in Cisco Unity Express EXEC mode to display the SNMP agent status and passwords.

The following example shows output from the **show snmp configuration** command:

```
se-10-0-0-0# config t

Enter configuration commands, one per line.  End with CNTL/Z.
se-10-0-0-0(config)# snmp-server community myaccess rw
se-10-0-0-0(config)# snmp-server community iminhere ro
se-10-0-0-0(config)# snmp-server enable traps
se-10-0-0-0(config)# snmp-server host 172.16.160.224 bigtraps
se-10-0-0-0(config)# snmp-server contact "Dial 71111 for system operator"
se-10-0-0-0(config)# snmp-server location "Bldg A NYC"
se-10-0-0-0(config)# end

se-10-0-0-0# show snmp configuration
Contact:              Dial 71111 for system operator
Location:             Bldg A NYC
Community 1 RO:       iminhere
Community 1 RW:       admin_main
Community 2 RW:       myaccess
Traps:                enabled
Host Community 1:     172.16.160.224 bigtraps
cueShutdownRequest:   disabled
se-10-0-0-0#
```

Setting Threshold Values for Subscriber Responses

Tracking spikes in the number of failures that occur within a short period of time for certain subscriber actions helps to identify possible security breaches in the system.

Each subscriber action has a default threshold value. Use the commands in this section if you want to change the default values.

Cisco Unity Express supports setting thresholds for the number of failures in a 5-minute interval for the following subscriber actions:

- Logging in.
- Entering a password.
- Entering a personal identification number (PIN) user ID.
- Entering a PIN password.
- Resetting a PIN.

When the number of attempts reaches the action's threshold, the system sends a notification to the SNMP host.

Prerequisites

Be sure that the appropriate MIBs are installed. See the *Cisco Unity Express SNMP MIB Release 2.2* guide for details.

Required Data for This Procedure

Number of times the following can occur before the system sends a notification to the SNMP host:

- Password errors (default is 30)
- Login errors (default is 30)
- PIN password errors (default is 30)
- PIN resets (default is 5)
- PIN user ID errors (default is 30)

SUMMARY STEPS

1. **config t**
2. (Optional) **notification security login user** *threshold*
3. (Optional) **notification security login password** *threshold*
4. (Optional) **notification security pin uid** *threshold*
5. (Optional) **notification security pin password** *threshold*
6. (Optional) **notification security pin reset** *threshold*
7. **end**
8. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**notification security login user** *threshold* **Example:** `se-10-0-0-0(config)# notification security login user 10`	(Optional) Sets the number of invalid login names within a 5-minute interval to *threshold*. If the number of failures exceeds this value, the system sends a notification to the SNMP host. The default value is 30. Valid values are 0 to 999.
Step 3	**notification security login password** *threshold* **Example:** `se-10-0-0-0(config)# notification security login password 6`	(Optional) Sets the number of invalid login passwords within a 5-minute interval to *threshold*. If the number of failures exceeds this value, the system sends a notification to the SNMP host. The default value is 30. Valid values are 0 to 999.
Step 4	**notification security pin uid** *threshold* **Example:** `se-10-0-0-0(config)# notification pin uid 12`	(Optional) Sets the number of invalid PIN user IDs within a 5-minute interval to *threshold*. If the number of failures exceeds this value, the system sends a notification to the SNMP host. The default value is 30. Valid values are 0 to 999.
Step 5	**notification security pin password** *threshold* **Example:** `se-10-0-0-0(config)# notification security pin password 8`	(Optional) Sets the number of invalid PIN passwords within a 5-minute interval to *threshold*. If the number of failures exceeds this value, the system sends a notification to the SNMP host. The default value is 30. Valid values are 0 to 999.
Step 6	**notification security pin reset** *threshold* **Example:** `se-10-0-0-0(config)# notification security pin rest 3`	(Optional) Sets the number of PIN password resets within a 5-minute interval to *threshold*. If the number of resets exceeds this value, the system sends a notification to the SNMP host. The default value is 5. Valid values are 0 to 999.

	Command or Action	Purpose

Step 7	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits configuration mode.

Step 8	**copy running-config startup-config** **Example:** `se-10-0-0-0# copy running-config startup-config`	Saves the configuration changes.

Verifying the SNMP Login and PIN Notification Thresholds

Use the **show notification configuration** command in Cisco Unity Express EXEC mode to display the SNMP login and password notification thresholds.

The following example shows output from the **show notification configuration** command:

```
se-10-0-0-0# config t
Enter configuration commands, one per line.  End with CNTL/Z.
se-10-0-0-0(config)# notification security login user 10
se-10-0-0-0(config)# notification security login password 6
se-10-0-0-0(config)# notification security pin uid 12
se-10-0-0-0(config)# notification security pin password 8
se-10-0-0-0(config)# notification security pin reset 3
se-10-0-0-0(config)# end
se-10-0-0-0# show notification configuration
Login user threshold:         10    (errors within a 5 minute interval)
Login password threshold:     6     (errors within a 5 minute interval)
PIN uid threshold:            12    (errors within a 5 minute interval)
PIN password threshold:       8     (errors within a 5 minute interval)
PIN reset threshold:          3     (resets within a 5 minute interval)
se-10-0-0-0#
```

Enabling Cisco Unity Express Shutdown Requests

Enabling shutdown requests allows the Cisco Unity Express module to be gracefully halted. For example, suppose an uninterruptible power supply (UPS) sends a power out alert to the Cisco Unity Express management application. The management application would send an SNMP shutdown request to bring down the Cisco Unity Express module while power is still supplied from the UPS.

For security reasons, the shutdown capability is disabled by default.

To reset the Cisco Unity Express module, use the **service-module service-engine** *slot*/*port* **reset** command on the router housing the module.

Prerequisites

Be sure that the appropriate MIBs are installed. See the *Cisco Unity Express SNMP MIB Release 2.2* guide for details.

SUMMARY STEPS

1. **config t**
2. **snmp-server enable cueShutdownRequest**
3. **end**
4. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**snmp-server enable cueShutdownRequest** **Example:** `se-10-0-0-0(config)# snmp-server enable cueShutdownRequest`	Enables Cisco Unity Express shutdown requests. Shutdown requests are disabled by default.

Step 3	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Exits configuration mode.

Step 4	**copy running-config startup-config** **Example:** `se-10-0-0-0# copy running-config startup-config`	Saves the configuration changes.

Verifying the Enabling of Shutdown Requests

Use the **show snmp configuration** command in Cisco Unity Express EXEC mode to display the status of the shutdown request capability.

The following example shows output from the **show snmp configuration** command:

```
se-10-0-0-0# show snmp configuration
Contact:              Dial 71111 for system operator
Location:             Bldg A NYC
Community 1 RO:       iminhere
Community 1 RW:       admin_main
Community 2 RW:       myaccess
Traps:                enabled
Host Community 1:     172.16.160.224 bigtraps
cueShutdownRequest    enabled
se-10-0-0-0#
```

CHAPTER 22

Registering Cisco Unity Express Endpoints to Cisco Unified Messaging Gateway

This section describes Cisco Unity Express endpoints, covering principally the new commands in Cisco Unity Express 3.1 to enable endpoints of this type to autoregister with Cisco Unified Messaging Gateway (UMG).

Endpoints running Cisco Unity Express 3.0 or earlier do not support autoregistration. They must be manually configured on Cisco UMG.

The section contains the following topics:

Overview of the Autoregistration Process

The purpose of autoregistration is for Cisco UMG to automatically "discover" a legitimate Cisco Unity Express 3.1 endpoint.

Note Currently, the only type of endpoint that can autoregister is Cisco Unity Express 3.1. In the current section, the term 'endpoint' refers exclusively to that type of endpoint, unless otherwise specified.

A messaging gateway discovers whether an endpoint is legitimate by attempting to validate the shared secret information in the autoregistration message sent by the endpoint. Successful validation ensures that VPIM messages can only be exchanged between trusted peers.

The autoregistration process starts after the endpoint boots up. An appropriately configured endpoint is enabled to autoregister and it has the following information:

- The location-id and IP address or domain name of its primary (and where applicable, its secondary) messaging gateway
- Registration ID and password that the messaging gateways will be expecting.
  - The instructions for configuring this ID and password on Cisco UMG are given in the *Cisco UMG 1.0 CLI Administrator Guide*.
  - The instructions for configuring this ID and password on Cisco Unity Express 3.1 are given below, in "Configuring Autoregistration with Cisco UMG" on page 2.

Beginning the process, the endpoint sends registration requests to both the primary Cisco UMG and the secondary messaging gateway in that order, if a secondary is configured. In the registration message is information about itself, such as its own location ID, broadcast ID, and so on. If the primary messaging gateway encounters configuration problems during registration (for example, a missing location-id), the process will fail, and the endpoint will not try to register with the secondary messaging gateway. If the problems are of a different nature (for example, connectivity problems) the endpoint will go ahead and try to register with the secondary messaging gateway.

When the endpoint autoregisters, the messaging gateway adds the endpoint to a trusted endpoints table and the endpoint is then allowed to send and receive VPIM messages to and from the messaging gateway with which it has registered, as well as to retrieve remote user information.

Automatic directory information exchange takes place a couple of minutes after registration, thereby enabling the messaging gateway to learn about the endpoint's properties.

Endpoints of the types Cisco Unity Express 3.0 or earlier, Cisco Unity, and Avaya Interchange do not support autoregistration, so they must be individually provisioned from messaging gateways. Instructions for doing this are given in the *Cisco UMG 1.0 CLI Adminstrator Guide*. An endpoint running Cisco Unity Express 3.1 that is not enabled to autoregister will be treated the same as these other types of endpoint.

Configuring Autoregistration with Cisco UMG

An endpoint running Cisco Unity Express 3.1 or later can autoregister with Cisco Unified Messaging Gateway. This means that when the endpoint comes online, it seeks out its messaging gateways (both primary and secondary, if configured) and registers itself. The alternative - manual provisioning (as opposed to autoregistration) - entails configuring all relevant details of each endpoint on its messaging gateway. This is the only option available to endpoints not running Cisco Unity Express 3.1.

After the messaging gateway authorizes the endpoint, it exchanges directories with its peers so that the whole system becomes aware that this endpoint is now online. Once you have enabled autoregistration, any time either the endpoint or the messaging gateway goes offline, the endpoint will re-register automatically as soon as both come back online.

Before enabling autoregistration, you must first specify the primary and then the secondary messaging gateway access information. Only after this do you enable autoregistration. Issuing these commands causes the profile(s) for the messaging gateways to be stored in the running configuration on Cisco Unity Express 3.1.

Note The endpoint cannot autoregister until you issue the **messaging-gateway registration** command.

Caution You must copy the configurations to the startup-config to make them persistent.

Save the configuration to the startup config by using the **write** command.

SUMMARY STEPS

1. **config t**
2. **messaging-gateway registration**
3. **messaging-gateway primary** *location-id umg-ip-addr* [**port** *umg-port*]
4. **username** *umg-reg-id* **password** *encryption-level umg-passwd*
5. (Optional) **retry-interval** *retry-interval*]
6. **end**
7. (Optional) **messaging-gateway secondary** *location-id umg-ip-addr* [**port** *umg-port*]
8. (Optional) **username** *umg-reg-id* **password** *encryption-level umg-password*
9. (Optional) **retry-interval** *retry-interval*]
10. **end**
11. end
12. show messaging-gateway

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**messaging-gateway registration** **Example:** `se-10-0-0-0(config)# messaging-gateway registration`	Causes the endpoint (Cisco Unity Express) to send a registration message to its primary and, if applicable, to its secondary messaging gateway, unless registration with the primary fails due to a configuration error.
Step 3	**messaging-gateway primary** *location-id umg-ip-addr* [**port** *umg-port*] **Example:** `se-10-0-0-0(config)# messaging-gateway primary 100 192.0.2.0 port 8080`	Enters gateway configuration mode and specifies the following information for the primary messaging gateway: • *location-id*--the location-id of the primary messaging gateway • *umg-ip-addr*--the IP address or domain name of the primary messaging gateway • (optional) **port**--port the primary messaging gateway will be listening on. The default port is 80. The primary Cisco UMG must be configured before the secondary. Otherwise, you will get the error message "Primary messaging gateway needs to be configured first."
Step 4	**username** *umg-reg-id* **password** *encryption-level umg-password* **Example:** `se-10-0-0-0(config-gateway)# username cue31 password text herein`	(Optional) Specifies the username and password required to authorize registration with the message gateway. • *umg-reg-id*--the registration ID the endpoint will use to register with the messaging gateway. Note that it is not necessarily the same as the location-id, because multiple endpoints may be assigned the same *umg-reg-id.* You can give either an encrypted password or non-encrypted password: encrypted and text tokens need to be used. • *encryption-level*-- The two acceptable values for this variable are – text – encrypted • *umg-password*--the password for registration with a messaging gateway is an alphanumeric string up to x in length.

	Command or Action	Purpose
Step 5	**retry-interval** *retry-interval* **Example:** se-10-0-0-0(config-gateway)# retry-interval 2	(Optional) The retry-interval is the delay before the endpoint attempts to re-register with the messaging gateway. The value is expressed in minutes. The default is 5 minutes.

Step 6	**end**
	Example:
	`se-10-0-0-0(config-gateway)# end`
		Exits gateway configuration mode and enters configuration mode.

Step 7	**messaging-gateway secondary** *location-id umg-ip-addr* [**port** *umg-port*] **Example:** `se-10-0-0-0(config)# messaging-gateway secondary 200 192.0.2.1 port 8080`	(Optional) Enters gateway configuration mode and specifies the following information for the secondary messaging gateway: • *location-id*--the location-id of the secondary messaging gateway • *umg-ip-addr*--the IP address or domain name of the secondary messaging gateway, and • (optional) **port**--port the secondary messaging gateway will be listening on. The default port is 80. The secondary Cisco UMG must be configured after the primary. Otherwise, you will get the error message “Primary messaging gateway needs to be configured first.”
Step 8	**username** *umg-reg-id* **password** *encryption-level umg-password* **Example:** `se-10-0-0-0(config-gateway)# username cue31 password text herein`	(Optional) Specifies the username and password required to authorize registration with the message gateway. • *umg-reg-id*--the registration ID the endpoint will use to register with the messaging gateway. Note that it is not necessarily the same as the location-id, because multiple endpoints may be assigned the same *umg-reg-id*. You can give either an encrypted password or non-encrypted password: encrypted and text tokens need to be used. • *encryption-level*-- The two acceptable values for this variable are – text – encrypted • *umg-password*--the password for registration with a messaging gateway is an alphanumeric string up to x in length.

	Command or Action	Purpose
Step 9	**retry-interval** *retry-interval* **Example:** se-10-0-0-0(config-gateway)# retry-interval 2	(Optional) The retry-interval is the delay before the endpoint attempts to re-register with the messaging gateway. The value is expressed in minutes. The default is 5 minutes.

Step 10	**end**
	Example:
	`se-10-0-0-0(config-gateway)# end`
		Exits gateway configuration mode and enters config mode.

Step 11	**messaging-gateway registration** **Example:** se-10-0-0-0(config)# messaging-gateway registration	Causes the endpoint to send a registration message to its primary and, if applicable, to its secondary messaging gateway - unless registration with the primary fails due to a configuration error.
Step 12	**end** **Example:** se-10-0-0-0(config)# end	Exits config mode and enters EXEC mode.
Step 13	**show messaging-gateway** **Example:** se-10-0-0-0# show messaging-gateway	(Optional) Displays the details associated with the registration of the messaging gateway, successful or otherwise. For more information, see the "Verifying the Registration Status of a Cisco Unity Express Endpoint" section on page 12.
Step 14	**write memory** **Example:** se-10-0-0-0# write memory	Copies the running-config to the startup-config and thereby ensures that the foregoing autoregistration configurations are not lost if the endpoint goes down.

Example

The following commands on a Cisco Unity Express 3.1 endpoint set it up to autoregister with Cisco UMG, and then enable autoregistration and finally write the configuration to startup-config.

```
se-10-0-0-0# config t
se-10-0-0-0(config)# messaging-gateway primary 100 192.0.2.0 port 8080
se-10-0-0-0(config-gateway)# username cue31 password text herein
se-10-0-0-0(config-gateway)# retry-interval 2
se-10-0-0-0(config-gateway)# end
se-10-0-0-0(config)# messaging-gateway secondary 200 192.0.2.1 port 8080
se-10-0-0-0(config-gateway)# username cue31 password text herein
se-10-0-0-0(config-gateway)# retry-interval 2
se-10-0-0-0(config-gateway)# end
se-10-0-0-0(config)# messaging-gateway registration
se-10-0-0-0(config)# end
se-10-0-0-0# write memory
```

Manually Registering a Cisco Unity Express Endpoint

If you want to add a Cisco Unity Express endpoint to your Cisco UMG system, and it is either

- running Cisco Unity Express 3.0 or earlier, or
- you want to avoid autoregistration activity with an endpoint running Cisco Unity Express 3.1,

you must manually provision it from Cisco UMG. First configure the endpoint, then provision it on Cisco UMG.

Note You need to perform these steps only if the endpoint has never undergone initial configuration - if the endpoint is already in operation, you will already have done all this. In that case, there is nothing left to do on the endpoint.

SUMMARY STEPS

1. **config t**
2. **network location-id** *number*
3. (Optional) **name** *location-name*
4. (Optional) **abbreviation** *name*
5. **email domain** *domain-name*
6. **voicemail phone-prefix** *digit string*
7. (Optional) **voicemail extension-length** *number* [**min** *number* | **max** *number*]
8. (Optional) **voicemail vpim-encoding** {**dynamic** | **G711ulaw** | **G726**}
9. (Optional) voicemail spoken-name
10. end

Repeat Steps 2 through 10 for each remote location.

11. **network local location-id** *number*
12. end
13. **show network locations configured**
14. **show network detail location-id** *number*
15. **show network detail local**
16. **show network queues**

DETAILED STEPS

	Command or Action	Purpose

Step 1	`config t`
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 2	`network location-id` *`number`*
	Example:
	`se-10-0-0-0(config)# network location-id 9`
		Enters location configuration mode to allow you to add or modify a location.
		• *number*—A unique numeric ID assigned to the location. This number is used to identify the location and is entered when a subscriber performs addressing functions in the TUI. The maximum length of the number is 7 digits. Cisco Unity Express supports up to 500 locations on a single system.
		• To delete a location, use the **no** form of this command.

Step 3	**`name`** *`location-name`*
	Example:
	`se-10-0-0-0(config-location)# name "San Jose"`
		(Optional) Descriptive name used to identify the location. Enclose the name in double quotes if spaces are used.
		• To delete a location name description, use the **no** form of this command.

Step 4	**`abbreviation`** *`name`*
	Example:
	`se-10-0-0-0(config-location)# abbreviation sjcal`
		(Optional) Creates an alphanumeric abbreviation for the location that is spoken to a subscriber when the subscriber performs addressing functions in the TUI. You cannot enter more than 5 characters.
		• To delete an abbreviation, use the **no** form of this command.

Step 5	**`email domain`** *`domain-name`*
	Example:
	`se-10-0-0-0(config-location)# email domain mycompany.com`
		Configures the e-mail domain name or IP address for the location. The domain name is added when sending a VPIM message to the remote location (for example, "4843000@mycompany.com"). If you do not configure a domain name or IP address, the Cisco Unity Express system at this location cannot receive network messages.
		• To remove the e-mail domain name or IP address and disable networking, use the **no** form of this command.
		Caution If you remove the e-mail domain for a network location, the system automatically disables networking from the Cisco Unity Express module to that location.
		If you remove the e-mail domain for the local location, then networking on that Cisco Unity Express module is disabled.
		To reenable a location, assign it a valid e-mail domain.

	Command or Action	Purpose
Step 6	**voicemail phone-prefix** *digit-string* **Example:** se-10-0-0-0(config-location)# voicemail phone-prefix *484*	(Optional) Configures the phone number prefix that is added to an extension to create a VPIM address for a subscriber at the location. A prefix is required only if an e-mail domain services multiple locations and extensions between the locations are not unique. Valid values: 1 to 15 digits. Default value: empty. • To delete a phone prefix, use the **no** form of this command.
Step 7	**voicemail extension-length** {*number* | **min** *number* **max** *number*} **Example:** se-10-0-0-0(config-location)# voicemail extension-length 8 se-10-0-0-0(config-location)# voicemail extension-length min 5 max 9	(Optional) Configures the voice mail extension length for the location. • *number*—Configures the number of digits contained in extensions at the location. • **max** *number*—Sets the minimum number of digits for extensions. Default value: 2. • **min** *number*—Sets the maximum number of digits for extensions. Default value: 15. • To remove the configuration for the number of digits for extensions, use the **no** form of this command.
Step 8	**voicemail vpim-encoding** {**dynamic** | **G711ulaw** | **G726**} **Example:** se-10-0-0-0(config-location)# voicemail vpim-encoding G711ulaw	(Optional) Configures the encoding method used to transfer voice-mail messages to this location. • **dynamic**—Cisco Unity Express negotiates with the location to determine the encoding method • **G711ulaw**—Cisco Unity Express always sends messages as G711 mu-law .wav files. Set this only if the receiving system supports G711 mu-law encoding (such as Cisco Unity). • **G726**—Cisco Unity Express always sends messages as G726 (32K ADPCM). Use for low-bandwidth connections or when the system to which Cisco Unity Express is connecting does not support G711 u-law. • Default value: **dynamic**. • To return to the default value for encoding, use the **no** or **default** form of this command.
Step 9	voicemail spoken-name **Example:** se-10-0-0-0(config-location)# voicemail spoken-name	(Optional) Enables sending the spoken name of the voice-mail originator as part of the message. If the spoken name is sent, it is played as the first part of the received message. Default: enabled. • To disable sending the spoken name, use the **no** form of this command.
Step 10	end **Example:** se-10-0-0-0(config-location)# end	Exits location configuration mode.

	Command or Action	Purpose

Step 11	**`network local location-id`** *`number`*
	Example:
	`se-10-0-0-0(config)# network local location-id 1`
		Enables networking for the local Cisco Unity Express system identified by the location-id number.
		• To delete the local location, use the **no** form of this command.
		⚠ **Caution** If you delete the local network location and then save your configuration, when you reload Cisco Unity Express, the local network location will remain disabled. After Cisco Unity Express restarts, reenter the **network local location-id** command to reenable networking at this location.

Step 12	**`exit`**
	Example:
	`se-10-0-0-0(config)# exit`
		Exits configuration mode.

Step 13	`show network locations configured`
	Example:
	`se-10-0-0-0# show network locations configured`
		(Optional) Displays the location-id, name, abbreviation, and domain name for each configured Cisco Unity Express location.

Step 14	**`show network detail location-id`** *`number`*
	Example:
	`se-10-0-0-0# show network detail location-id 9`
		(Optional) Displays network information for the specified location-id, including the number of messages sent and received.

Step 15	**`show network detail local`**
	Example:
	`se-10-0-0-0# show network detail local`
		(Optional) Displays network information for the local Cisco Unity Express location, including the number of messages sent and received.

Step 16	**`show network queues`**
	Example:
	`se-10-0-0-0# show network queues`
		(Optional) Displays information about messages in the outgoing queue that are to be sent from this Cisco Unity Express system. The queue information contains three displays: one for urgent job queue information, one for normal job queue information, and one for running job information.

Examples

The following examples illustrate the output from the **show network** commands on company Mycompany's call control system in San Jose with remote voice-mail provided by six remote Cisco Unity Express sites.

```
se-10-0-0-0# show network locations

ID        NAME                           ABBREV  DOMAIN
101       'San Jose'                       SJC    sjc.mycompany.com
102       'Dallas/Fort Worth'              DFW    dfw.mycompany.com
201       'Los Angeles'                    LAX    lax.mycompany.com
```

```
202       'Canada'                      CAN    can.mycompany.com
301       'Chicago'                     CHI    chi.mycompany.com
302       'New York'                    NYC    nyc.mycompany.com
401       'Bangalore'                   BAN    bang.mycompany.com

se-10-0-0-0# show network detail location-id 102

Name:                               Dallas/Fort Worth
Abbreviation:                       DFW
Email domain:                       dfw.mycompany.com
Minimum extension length:           2
Maximum extension length:           15
Phone prefix:
VPIM encoding:                       G726
Send spoken name:                    enabled
Sent msg count:                      10
Received msg count:                  110

se-10-0-0-0# show network detail local

location-id:                          101
Name:                                 San Jose
Abbreviation:                         SJC
Email domain:                         sjc.mycompany.com
Minimum extension length:             2
Maximum extension length:             15
Phone prefix:
VPIM encoding:                        dynamic
Send spoken name:                     enabled
```

The following example illustrates output from the **show network queues** command. The output includes the following fields:

- ID—Job ID.
- Retry—Number of times that Cisco Unity Express has tried to send this job to the remote location.
- Time—Time when the job will be resent.

```
se-10-0-0-0# show network queues

Running Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
107   VPIM 06:13:26   20    jennifer        1001@sjc.mycompany.com
106   VPIM 06:28:25   20    jennifer        1001@sjc.mycompany.com

Urgent Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
123   VPIM 16:33:39   1     andy            9003@lax.mycompany.com

Normal Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
122   VPIM 16:33:23   1     andy            9001@lax.mycompany.com
124   VPIM 16:34:28   1     andy            9003@lax.mycompany.com
125   VPIM 16:34:57   1     andy            9002@lax.mycompany.com
126   VPIM 16:35:43   1     andy            9004@lax.mycompany.com
```

After performing on the endpoint the steps just listed, on the Cisco UMG that is to be the endpoint's primary messaging gateway, manually provision the endpoint by following the instructions given in the *Cisco UMG 1.0 CLI Adminstrator Guide*.

Register the endpoint by issuing the Cisco UMG command *location-id* **cue enabled** (fully described in the *Cisco UMG 1.0 CLI Adminstrator Guide*) on the endpoint's primary messaging gateway.

On that messaging gateway, verify that the endpoint is registered to it by using the command **show endpoint local**.

Verifying the Registration Status of a Cisco Unity Express Endpoint

You can verify whether the current Cisco Unity Express 3.1 or later version endpoint is registered with a messaging gateway, and check all the details associated with the registration - successful or otherwise - by using the **show messaging-gateway** command in Cisco Unity Express EXEC mode.

You can see which Cisco UMGs you have configured as its primary and secondary messaging gateways, with their respective port numbers. Indications in the status column show whether or not the endpoint has registered with the messaging gateway successfully.

Table 22-1 show messaging-gateway Output

AutoRegister to messaging gateway(s)	Enabled / disabled		
Remote directory lookup	Enabled / disabled	with / without TUI prompt	
Primary/secondary messaging gateway	IP address (port number)		
	Status	Registered / Not Registered	If registered, timestamp of initial registration confirmation; if not registered, reason is given as a code (see Table 22-2)
	Default route	Enabled/ disabled	
	Location-id	location-id of the messaging gateway	
	Reg-id	Registration username the Cisco UMG expects from endpoint	
	Reg-password	(Not displayed)	Registration password the Cisco UMG expects from endpoint. It is never displayed.
	Retry-interval	Delay in minutes before the endpoint attempts to register again. Default is 5 minutes.	Not displayed if not set.

If the endpoint has registered successfully, you will see the date and time of the initial registration in the status column. You can also check the configuration for a default routing destination for a message to a voicemail address that can be resolved by neither Cisco Unity Express nor Cisco UMG. To illustrate: if you give a phone number that cannot be found in a Cisco Unity Express local search or in a Cisco UMG remote lookup, the message will be forwarded to that default route destination.

If the endpoint has not registered successfully, the reason for the failure will be displayed in the status column:

Table 22-2 show messaging-gateway: Status Codes

Code	Meaning
Registered	
Not registered	Autoregistration is not enabled
Not configured	
Not registered (general error)	Autoregistration failed due to an error other than those specified in this table.
Not registered (connection timeout)	Connection timed out
Not registered (authentication failed)	Authentication failed
Not registered (link is down)	Link is down
Not registered (location is forbidden)	The Cisco Unity Express endpoint with that location-id has been blocked by Cisco UMG and is thus is not allowed to register (for instructions on how to prevent an endpoint from registering, see the *Cisco UMG 1.0 CLI Adminstrator Guide*.
Not Registered (duplicated location)	The Cisco Unity Express location-id is not globally unique: there is another entity in the system with the same location-id.
Not Registered (invalid configuration)	General configuration error such as the secondary messaging gateway location ID not being configured on the primary messaging gateway.
Not Registered (manually de-registered)	An intermediate state to indicate manually triggered re-registration, for example, the messaging gateway's access information being updated.

The following command on a Cisco Unity Express 3.1 or later version endpoint displays its registration status:

```
se-10-0-0-0# show messaging-gateway
Messaging gateways :

AutoRegister to messaging gateway(s) : Enabled
Remote directory lookup : Enabled (without TUI prompt)

Primary messaging gateway :
        172.18.12.28 (8080)
        Status : Registered (Sun Jun 10 20:35:43 GMT 2007)
        Default route : Disabled
        Location-id : 50000
        Reg-id : umg
        Reg-password : (Not displayed)
        Retry-interval : 5 minute(s)

Secondary messaging gateway :
        Status : Not Configured
```

Enabling or Disabling Remote Lookup, With or Without TUI Confirmation

Enabling Remote Directory Lookup Without TUI Prompt

When you enable autoregistration by issuing the **messaging-gateway registration** command on a Cisco Unity Express 3.1 endpoint, you also enable the endpoint to do remote lookup automatically. This includes a short prompt informing subscribers that the lookup may take some time.

Enabling Remote Directory Lookup With TUI Prompt

Enabling the remote directory lookup feature does not also enable the directory lookup confirmation in the TUI flow feature, in which Cisco Unity Express 3.1 gives subscribers the option to do remote lookup if there is no local match. To enable TUI directory lookup confirmation, use the config-mode command **messaging-gateway directory lookup tui-prompt**.

Disabling Remote Directory Lookup

To have no remote lookup at all, disable it by issuing the **no messaging-gateway directory lookup** command.

Note Disabling the remote directory lookup feature also disables directory lookup confirmation in the TUI flow, and conversely, enabling directory lookup confirmation in the TUI flow will also enable remote directory lookup.

Viewing Status

To view the status of these features, use the **show messaging-gateway** command, which displays the following output:

Remote directory lookup status:

- No--remote directory lookup is disabled
- Yes--remote directory lookup is enabled
  - Enabled with TUI-prompt--TUI confirmation prompt is enabled
  - Enabled without TUI-prompt--TUI confirmation prompt is disabled.

Viewing Cached and/or Configured Network Locations

To view a list of all cached remote location entries on Cisco Unity Express 3.1, use the EXEC-mode **show network locations cached** command.

To list all configured remote location entries on Cisco Unity Express 3.1, use the EXEC-mode **show network locations configured** command. This command replaces the old **show network locations** command.

Refreshing Locations

To manually refresh a cached location entry on Cisco Unity Express 3.1, use the **network location cache refresh** *id* command in EXEC-mode. This command will not generate any response if it is performed successfully. Otherwise, an error message appears.

Setting the Expiration for Cached Locations

To set the expiration time for a cached location on Cisco Unity Express 3.1, use the **network location cache expiry** *int* command in config-mode. The *int* value stands for number of days. By default, this value is set to 4. The **no** command will set the value back to its default value. The value is persisted by means of the nvgen method. It is not stored in the database.

Overloading a NAT Device: the Consequences for Endpoints

One endpoint can be configured to get to its primary messaging gateway with complete connectivity if :

- Two Cisco Unity Express endpoints are behind a NAT device that has only one IP address to assign --an overload situation--
- Those endpoints have two different messaging gateways configured as primary messaging gateways,

Note The other endpoint can only do HTTP-related activities (assuming proper configuration) and not the SMTP activities.

CHAPTER 23

Configuring Your Cisco IOS Gateway for T.37 On-Ramp and Off-Ramp Fax Support

This appendix contains the following information pertaining to the configuration of your Cisco IOS Gateway for T.37 On-Ramp and Off-Ramp fax support:

- "Deployment Scenarios" section on page 1
- "Configuration Options" section on page 4
- "Fax Feature Benefits and Limitations" section on page 10
- "Configuring Your Cisco IOS Gateway for T.37 On-Ramp and Off-Ramp Fax Support" section on page 12

Deployment Scenarios

To integrate fax functionality, you must use a Cisco IOS fax gateway for both incoming and outgoing calls. You can use the same or different machines for these gateways. However:

- The fax gateway for inbound fax calls (On-ramp or Fax Detection application) must run on the originating gateway.
- The fax gateway for outbound calls (Off-ramp) must run on terminating gateway.

Figure 23-1 and Figure 23-2 show examples of deployment scenarios respectively with Cisco Unified Communications Manager Express (Cisco Unified CME, formerly know as Cisco Unified CallManager Express) and Cisco Unified Communications Manager (formerly know as Cisco Unified CallManager). In both scenarios:

- The Cisco IOS Gateway sends mime-encoded faxes over SMTP to Cisco Unity Express (CUE).
- Cisco Unity Express sends VPIM-encoded voice messages or faxes over SMTP to another Cisco Unity Express node in the network.
- Cisco Unity Express sends VPIM-encoded voice messages or faxes over SMTP to a Cisco Unity server in the network.

Figure 23-1 Cisco Unified CME Deployment Example

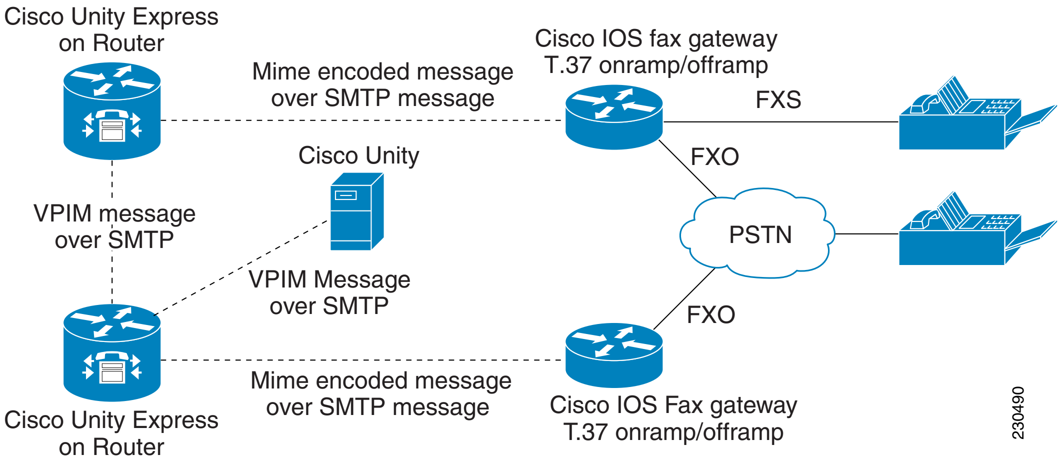
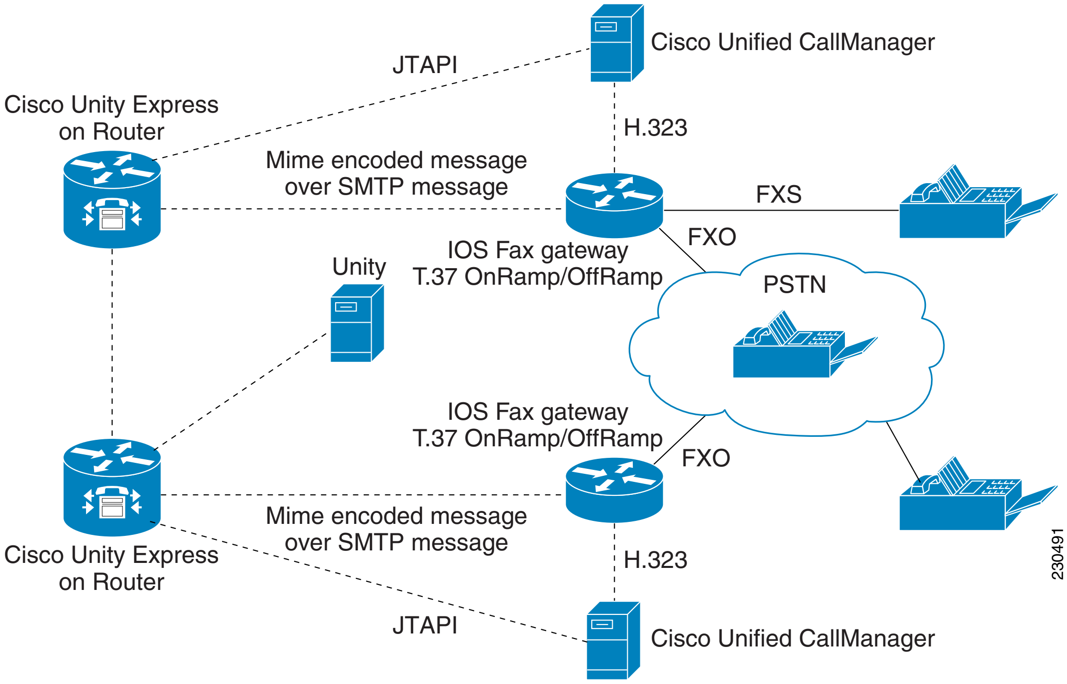


Figure 23-2 Cisco Unified Communications Manager Deployment Example



Fax Call Flow

The fax call is established in phases. First, the call originator prepares a fax and dials a destination number. When the destination fax device picks up the call, the originator and destination are connected in voice call. However, to transition to fax transmission, one party must signal that it is a fax device.

Each device can send its signal using one of the following methods:

- The calling device sends a Calling Tone (CNG) tone, which identifies the calling party as a fax device
- The called device sends a Called Station Identifier (CED) tone, which identifies the called device as a fax machine

After the fax call is established, the devices identify the facilities and capabilities. The next phases are transmitting the content, signaling the end of the transmission and confirmation, and releasing the call. The Cisco IOS fax gateways support the following methods:

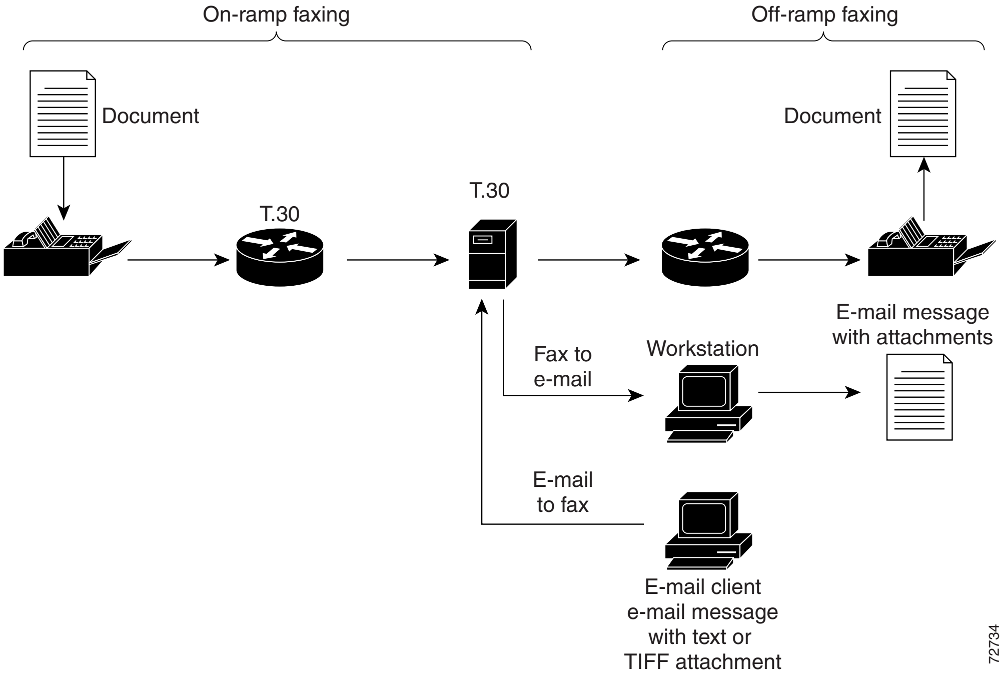
- Fax Pass-Through and Fax Pass-Through with Upspeed
- Cisco Fax Relay
- T.38 Fax Relay
- T.37 Store-and-Forward Fax
- IVR Applications for Fax

The T.37 Store-and-Forward Cisco IOS fax gateway uses the T.37 store-and-forward fax application, which consists of two processes:

- On-ramp
- Off-ramp

These processes are shown in Figure 23-3 and explained in the following sections.

Figure 23-3 T.37 Store and forward Call Flow



On-Ramp Faxing

With the On-ramp process, a voice gateway handles incoming calls from the standard fax machine or the PSTN and converts a traditional Group 3 fax to an e-mail message with a Tagged Image File Format (TIFF) attachment. The fax e-mail message and attachment are handled by an e-mail server while traversing the packet network. When acting as the On-ramp gateway, the Cisco gateway receives faxes from end users, converts them into TIFF files, creates standard MIME e-mail messages, attaches the TIFF files to the e-mail messages, and forwards the fax-mail messages to the designated SMTP server for storage. The gateway uses the sending MTA and dial peers to complete these tasks. The sending MTA, which is the Cisco gateway, defines delivery parameters associated with the e-mail message to which the fax TIFF file is attached. The delivery parameters include defining a return e-mail path or designating a destination mail server.

Off-Ramp Faxing

With the Off-ramp process, a voice gateway handles calls going out from the network to fax machine or the PSTN and converts a fax e-mail with TIFF attachment into a traditional fax format that can be delivered to a standard fax machine or the PSTN. Off-ramp faxing requires that the Cisco gateway act as an Off-ramp gateway to dial the POTS and communicate with a remote fax machine (Group 3 fax device), using standard fax protocols. The Off-ramp gateway provides the following functionality:

- Converts a fax-mail to TIFF file (or plain text file) into a standard format and delivers it to the recipient. The Store-and-Forward Fax application does not alter the TIFF or plain text file in any way from its original format when converting it into a standard fax format. The Off-ramp gateway uses the receiving MTA and dial peers to perform the conversion.
- Delivers an e-mail message as a standard fax transmission. The Cisco gateway generates information that is appended to the top of each faxed page (text-to-fax pages) and creates a fax cover sheet. The Off-ramp gateway uses the receiving MTA, dial peers, and commands specific to formatting the appended information and generating a fax cover sheet to deliver e-mail messages as fax transmissions.
- Uses only POTS dial peers to define the line characteristics between the forwarding Off-ramp gateway and the fax device. Optionally configure the MMoIP dial peers can be configured to define fax compression schemes and resolution. This option is useful only if those parameters are to be altered for the received fax-mails.
- Defines the parameters associated with the gateway SMTP server, using the receiving MTAs. This can be its SMTP host aliases, which can be different than its normal DNS hostnames, or internal Cisco IOS hostname.

Note You can combine On-ramp and Off-ramp faxing processes on a single gateway, or you can put them on separate gateways. Both On-ramp and Off-ramp are available with Cisco IOS Release 12.3(7) T or higher.

Configuration Options

The following sections explain your configuration options for the Fax feature. These options are:

- Using separate DIDs for Fax with either:
  - Connect first mode
  - Listen first mode
- Using single DID for voice and fax with either:
  - Connect first mode
  - Listen first mode

- Using the Off-Ramp application with either:
  - On-ramp application
  - Fax detect application

Using Separate DIDs for Fax

Using a separate DID for the fax, enables you to configure a unique extension that can be used exclusively for sending faxes to the Cisco Unity Express in either Cisco Unified CME or Cisco Unified Communications Manager mode. To use this option, you must configure an ephone-dn or extension for the fax DID on the Cisco Unified CME or Cisco Unified Communications Manager. This enables:

- Voice calls to be forwarded to the outbound dial-peer for the On-ramp process
- Fax calls (based on DID) to be directly routed to the outbound dial-peer for the On-ramp process

On the Cisco Unity Express node, you must:

- Configure the inbound fax gateway.
- Enable the mailbox to receive the faxes from a fax gateway.
- Assign the fax number to this user to create a separate fax DID.

The configuration steps are exactly the same as for voice mailboxes except that you must also enable the mailbox to receive faxes from a fax gateway and create a fax number for the user. The user can login to this mailbox using a voice number. Logging in to a mailbox using the fax DID is not supported.

You can use separate DIDs for Fax with either:

  - Connect First Mode
  - Listen First Mode

Using a Single DID for Voice and Fax

When configuring a single DID number for the voice and fax, use the Primary extension for the subscriber. All the fax calls are routed to the fax detect application on the fax gateway. Then the fax gateway either:

- Routes the call either to a MMoIP dial-peer if it is a fax call.
- Routes the call to voice dial-peer.

On the Cisco Unity Express, you must:

- Enable a mailbox to receive faxes from a fax gateway
- Configure the fax number as the extension of the user.

  If no fax number is configured, by default the subscriber’s extension is used.

You can use single DID for voice and fax with either:

  - Connect first mode
  - Listen first mode

Using Connect First Mode with Single DID

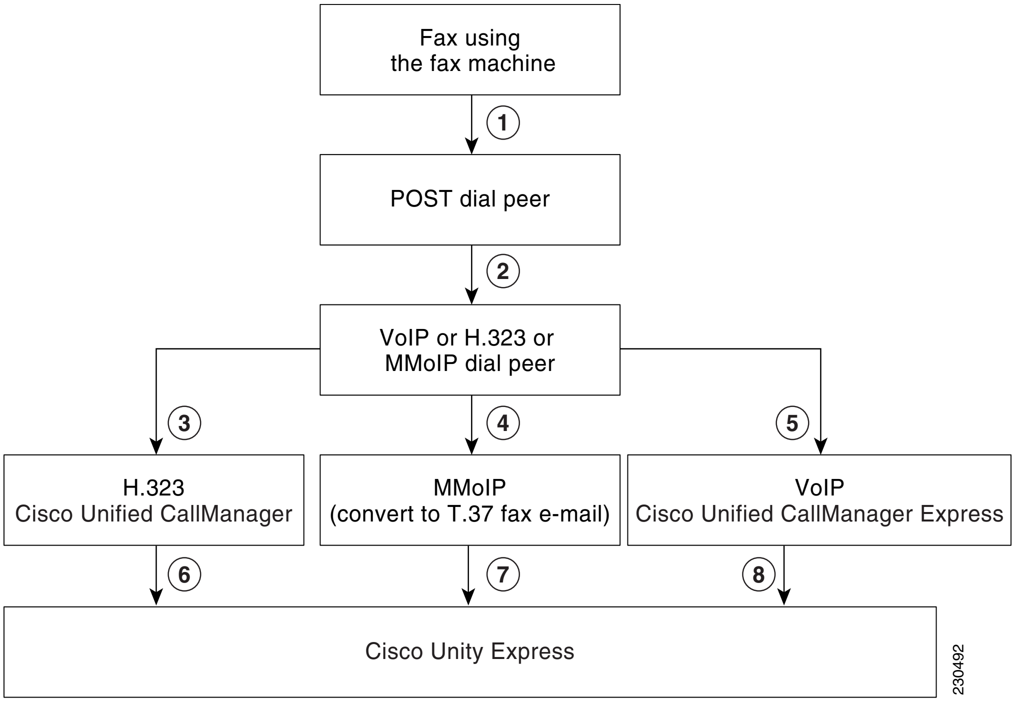
The Cisco Unity Express relies on the fax detection application to support single DID functionality. The fax detection application has a limitation that causes the fax call to get disconnected and requires the fax to be resent when the either of the following sequences occur:

- Sequence 1:
  - A fax call comes through the gateway (with fax detection application configured to work in connect first mode).
  - The phone rings.
  - A subscriber picks up the call and disconnects the call before the application detects it is the fax call.
- Sequence 2:
  - A fax call comes through the gateway (with the fax detection application configured to work in connect first mode).
  - The phone rings.
  - A subscriber picks up the call and hears CNG tones.
  - When a subscriber tries to transfer the call to fax dial peer (MMoIP), the fax call is disconnected.

To completely understand this use of the connect first mode with a single DID, you must first understand the high-level fax call flow. Figure 23-4 shows the various stages in the fax call, with each call flow labeled to indicate the corresponding step described in detail below.

Note This scenario assumes that the fax detection application running on the IOS gateway.

Figure 23-4 High-Level Fax Call Flow



When the fax detect application is configured in connect first mode, it connects the call before listening for the fax tones. The sequence of events, as shown in Figure 23-4, are:

- The fax call is initiated from the fax machine. The fax machine establishes a POTS connection to the Cisco IOS fax gateway POTS dial peer using an FXS or FXO port. (This is shown in Figure 23-4 as step 1.)
- The inbound POTS dial peer that is configured with the fax detection application creates a call leg between an FXO or FXS port, a POTS dial peer, and a VoIP dial-peer. (This is shown in Figure 23-4 as step 2.)
- The fax detection application establishes second leg of call between a VoIP/SIP dial peer and a phone, or a VoIP/H.323 dial peer and a phone. When the phone starts ringing (corresponding to the phone number in the single DID case), the user picks up the phone or call and is transferred to the voice mail. After the call is established, the gateway starts listening for the CNG tones. If the gateway is not able to establish that it is fax call within the equivalent of two CNG tones (six seconds), the call is treated as a voice mail call. (This is shown in Figure 23-4 as steps 3 and 5) However, if the gateway detects that it is a fax call, the voice leg of call is disconnected and call is transferred to a MMoIP dial peer. (This is shown in Figure 23-4 as step 4.)
- If the call is a voice call and Cisco Unity Express is integrated with Cisco Unified Communications Manager, the voice call is established. (This is shown in Figure 23-4 as step 3.) If there is no answer, the call is forwarded to Cisco Unity Express. (This is shown in Figure 23-4 as step 6.)
- If the call is a voice call and Cisco Unity Express is integrated with Cisco Unified CME, the voice call is established. (This is shown in Figure 23-4 as step 5.) If there is no answer, the call is forwarded to Cisco Unity Express (This is shown in Figure 23-4 as step 8.)

- If the call is a fax call, irrespective of how Cisco Unity Express is integrated, the fax application configured on the outbound MMoIP dial peer converts the fax into an e-mail message with TIFF attachment(s) and sends the message over SMTP to Cisco Unity Express (This is shown in Figure 23-4 as step 7.)

From the user's point of view, this is the sequence of events:

1. The fax call is initiated.
2. The called number starts ringing.
3. The user picks up the phone or the call is transferred to the voice mail.
4. If the user picks up the phone, they hear CNG tones (in the case of fax calls) or voice (in the case of voice calls). At this point:
   - If the user disconnects the call before the fax gateway can detect that it is a fax call, the call is disconnected and fax must be resent.
   - If the user puts the call on hold for the six seconds that the gateway requires to detect that it is a fax call, the call leg between gateway and Cisco Unified CME or Cisco Unified Communications Manager is disconnected. The call is established to a MMoIP dial peer.
   - If the user attempts to transfer the call to the fax number (MMoIP), the call transfer fails and subsequently the call is disconnected.
5. If the call is forwarded to the voice mail of the user, the voice mail prompt starts playing. If the call is a voice call, the user can leave a voice message. If the call is a fax, the CAG tone is detected within six seconds, the voice call is pulled back, and another call leg to MMoIP dial-peer is established. The voice leg of call is disconnected.

Using Connect First Mode with Separate DIDs

The sequence of events for the Connect First Mode with separate DIDs are similar to the sequence described in the "Using Connect First Mode with Single DID" section on page 6. However, there is no need for fax detection on the fax gateway because the fax has separate DID. Calls to the fax numbers are routed by the fax gateway, and the MMoIP dial-peer is used to send the faxes to Cisco Unity Express over SMTP in the form of e-mail messages (as described in the "Using the Fax Detection Application vs the On-ramp Application" section on page 9). The calls to the voice numbers are routed to the VoIP dial peer, using SIP for Cisco Unified CME and H.323 for Cisco Unified Communications Manager.

A single DID can exist along with separate DIDs. We recommend that you do not use the fax detection application when there are separate DIDs for fax and voice calls in order to give the users a better experience.

Using Listen First Mode with Single DID

When the fax detect application is configured in listen first mode, the fax detect application listens for the CNG tones first and connects the call either to VoIP or MMoIP dial-peer based on whether the call is a voice or fax call. The sequence of events, as shown in Figure 23-4, are:

1. The fax call is initiated from the fax machine. The fax machine establishes a POTS connection to POTS dial peer using an FXS or FXO port. The fax detection application on the POTS dial-peer listens for the fax tones. The fax application routes the call to either the MMoIP dial peer or VoIP/H.323 dial peer. When fax gateway is listening for the fax tones, it can play some prompts to the call originator. These prompts can be dial-tones, which simulate the tones that indicate that the destination device is ringing. (This is shown in Figure 23-4 as step 1.)

2. If the call is not detected as fax, a VoIP dial-peer is used (H.323 in case of Cisco Unified Communications Manager and SIP in case of Cisco Unified CME) to route the call to the call agent. (This is shown in Figure 23-4 as steps 3 and 5 respectively.) The call agent routes the call to the destination. (This is shown in Figure 23-4 as steps 6 and 8 respectively.) After the phone starts ringing, the user picks up the phone or call is transferred to the voice mail on CFNA/CFB.
3. If the call is a fax call, irrespective of how Cisco Unity Express is integrated, the call is handed over to outbound MMoIP dial peer. (This is shown in Figure 23-4 as in as step 4.) The fax application configured on the outbound MMoIP dial peer converts the fax into e-mail message with TIFF attachment(s) and sends it to Cisco Unity Express. (This shown in Figure 23-4 a as step 7.)

The user experience for this configuration can be described as follows:

1. A call is initiated.
2. The calling party starts hearing the ring tone, if the fax gateway is set up to play ring tone during fax detection. Otherwise, calling party hears silence.
3. The called phone does not ring until the call is detected as a voice call and the gateway routes the call to the phone.
4. If the call is detected as voice, the call is routed to the destination number using the SIP/H.323 dial peer and the phone starts ringing. The call then proceeds like any other voice phone call.
5. If the gateway detects that the call is a fax, it is sent to a MMoIP dial peer and the fax is converted into an e-mail message with a TIFF attachment. A fax then appears in the called party’s mailbox. The calling party hears the CED tones and the fax is sent.

Using Listen First Mode with Separate DID

After you configure the dial peers for fax & voice calls, the calls can be routed to either a fax MMoIP dial peer or a VoIP dial peer (for Cisco Unified CME, use SIP and for Cisco Unified Communications Manager, use H.323). If customer has separate DIDs, we recommend that you use the On-ramp application on the POTS dial peer (see the next section for more information about the On-ramp application). However, you might want to use a mixed mode configuration, with some users using a single DID for the fax and voice and other users using separate DIDs for fax and voice.

To configure fax detection application, see the “Configuring the Fax Gateway for the Fax Detection Application” section on page 20.

Using the Fax Detection Application vs the On-ramp Application

You must use the fax detection application if you want to use the single DID functionality. However, the fax detection application has limitations, as described in the “Using a Single DID for Voice and Fax” section on page 5.

We recommend that you configure the On-ramp application, instead of the fax detect application, on the fax gateway when you use separate DIDs for fax and voice calls. The sequence of events when you use the On-ramp application, as shown in Figure 23-4, are:

1. The fax call is initiated from the fax machine. The fax machine establishes a POTS connection to the Cisco IOS router POTS dial peer using an FXS or FXO port (shown in Figure 23-4 as step 1). The inbound POTS dial peer routes the call to the MMoIP dial-peer.
2. On the outbound MMoIP dial peer, the T.30 packets are converted into a fax e-mail message with a TIFF attachment (shown in Figure 23-4 as step 4).

3. The e-mail message is sent to the Cisco Unity Express module over a SMTP connection (shown in Figure 23-4 as step 7).
4. The fax is stored in the subscriber’s mailbox.

Fax Feature Benefits and Limitations

The main benefits and limitations of the fax feature are:

- Faxes can be composed and sent from the analog fax machine only. There is no other support that is offered on Cisco Unity Express to compose a fax.
- Broadcast faxes are not supported.
- Faxes sent to the GDM with a phone extension are supported. However, GDM access from the IMAP is not supported.
- Faxes can be printed using the fax number configured at the system level. This number is played when a user tries to print the fax using the TUI or VVE. Users can override this number with the fax number of their choice. This option allows subscribers to print the faxes to the fax machine of their choice.
- Faxes can be forwarded in the Cisco Unity Express network. A subscriber can record annotations before forwarding a fax. When forwarding the fax, the sender can mark it as private, urgent, or both. When a subscriber listens to forwarded message, the annotations are played the same way as a voice message.
- Replying to an original received fax using the fax gateway is not supported. After the message is forwarded in the Cisco Unity Express network, the reply feature works the same way as for other voice messages.
- Live Reply to faxes is not supported
- Faxes are sent to a Cisco Unity Express or Cisco Unity system on the network using VPIM2.
- Faxes can be deleted and undeleted like regular voice messages.
- The delivery status notification is processed for outgoing faxes. When a delay or failure notification occurs, DDR or NDR is generated for the subscriber.
- For incoming messages, the embedded SMTP server handles any error conditions. After the message is accepted, it is assumed that the message is successfully processed.
- The fax is stored internally as BASE64 encoded. The size of the fax taken for the calculations in the system is the BASE64 encoded size. The mailbox usage and related information is displayed in units of time. The fax size is converted from bytes to seconds based on G711 algorithm (assuming sample rate of 64 KBps). The fax size, in seconds, used in the system is calculated by multiplying the length of the message by 8000 seconds, where the length of the message is in bytes.
- The total number of fax sessions is counted against the total TUI sessions allowed in the system. The number of maximum fax sessions (calls) in the system is the same as the maximum limit of TUI sessions.
- You can use the message notification feature with faxes in the same way as voice messages. Faxes are sent as TIFF attachment in the notification e-mail.
- Fax can be marked for future delivery while forwarding a fax.
- Faxes are accessible from the supported IMAP supported clients. The actual fax is attached to the e-mail message as a TIFF file. The name of the TIFF file has the format FM_*yyyy.mm.dd_hh.mm.ss*.tif, where *hh* is in 24-hour format. The IMAP clients let subscribers

download the message and save the fax attachment on local workstation. The attachments can be viewed and printed using the standard TIFF readers. Faxes have one of the following subjects depending on the source of the message and whether it was sent over PSTN or forwarded in Cisco Unity Express network:

- For faxes from a fax machine:

  Fax Message from *external-phone-number*

  Fax message from Unknown sender
- For faxes forwarded by the local user

  Fax Message from *extension*
- For faxes forwarded from GDM with extension

  Fax Message from *extension*
- For faxes from GDM without extension

  Fax Message from *display_name/user_ID*
- For faxes forwarded by Remote/network user

  Fax Message from *VPIM_ID*
- NDR for forwarded fax

  Non Delivery Receipt: Fax message to *recipient*

  where *recipient* can be ether a:

  Extension — for local user & GDM with extension

  Display Name/User ID — for local GDM without extension

  VPIM ID — for remote user/blind address

  Phone Number — for a fax machine
- DDR for forwarded fax (only for forwarded faxes)

  Delayed Delivery Receipt: Fax message to *recipient*

- The GDM cannot be accessed from the supported IMAP clients. Therefore, faxes sent to GDM cannot be downloaded on IMAP clients. However, the e-mail message notification feature for GDMs attaches the faxes to the notification e-mail.
- You can see fax headers using the VVE; however; you cannot see the contents of faxes using VVE. Faxes can be printed from VVE using an outbound fax call.
- The [mandatory] message expiry is imposed on the faxes.
- You must integrate Cisco Unity Express with one Cisco fax gateway to send outbound faxes and to receive inbound fax calls. For inbound and outbound calls, you can use the same or different gateways. However, you cannot integrate two or more Cisco Unity Express nodes with the same fax gateway for inbound fax calls.
- The ability to receive faxes from the fax gateway can be enabled at the system or user level. At the system level, you can enable faxing by configuring the inbound fax gateway. You can disable it at the system level by removing the incoming fax gateway.
- You can use either the CLI or GUI to enable or disable the receiving of faxes from a fax gateway for a mailbox. By default, all the mailboxes can receive faxes from the fax gateway if the inbound fax gateway is configured. After faxing is enabled for the mailbox, the mailbox can receive the faxes. If you want to assign separate DID for the fax to a user, you must assign a unique fax DID to a user. The same mailbox is used for storing both faxes and voice mails. You can remove the separate DID

for the fax at any time without impacting the fax or voice messages. Also, you can disable the fax without impacting the existing messages in the mailbox. However, after faxing is disabled for a mailbox, the system rejects faxes addressed to that mailbox from a fax machine.

- The fax feature is supported when Cisco Unity Express is running in Cisco Unified SRST mode.
- Outbound faxes (for printing) can use a restriction table to send the fax.

Configuring Your Cisco IOS Gateway for T.37 On-Ramp and Off-Ramp Fax Support

This section discusses the following topics:

- Prerequisites, page 12
- Configuring the Fax Gateway for T.37 On-Ramp, page 13
- Configuring the Fax Gateway for T.37 Off-Ramp, page 15
- Configuring the Fax Gateway for the Fax Detection Application, page 20

Prerequisites

Before you can configure fax feature, you must configure the fax gateway. As described in the "Configuration Options" section on page 4, you have the following options:

- Using the Off-Ramp application with the On-Ramp application
- Using the Off-Ramp application with the fax detect application

For instructions on how to configure these options, see:

- Configuring the Fax Gateway for T.37 On-Ramp, page 13
- Configuring the Fax Gateway for T.37 Off-Ramp, page 15
- Configuring the Fax Gateway for the Fax Detection Application, page 20

The decision of which option to use to configure the fax gateway is determined, as described in the "Configuration Options" section on page 4, by whether you will be:

- Using separate DIDs for Fax with either:
  - Connect First Mode
  - Listen First Mode
- Using single DID for Voice and Fax with either:
  - Connect First Mode
  - Listen First Mode

If you want to restrict specified extensions from using this feature, you must configure a restriction table as described in the "Configuring Restriction Tables" section on page 32.

After you complete the appropriate prerequisites, you can then configure the following parameters, as described in the "Configuring System-Wide Fax Parameters" section on page 58):

- The system level fax numbers used to print faxes.
- An association between a user and a fax number that can be used to receive faxes.

Configuring the Fax Gateway for T.37 On-Ramp

Prerequisites

You must configure incoming and outgoing dial peers in order to route the fax call through the gateway.

For the POTS dial-peer configuration, the **incoming called-number** command allows this dial-peer to match any inbound called number that comes into the gateway. Most real world scenarios usually have a specific fax number configured. The direct-inward-dial command takes the received call number as the number that is to be used when it makes a MMoIP dial-peer match. The **port** command associates this POTS dial-peer with a physical port on the gateway. The important command from a T.37 on-ramp perspective is the **application** *name* command. This command associates the on-ramp fax application with a specific POTS dial peer. The *name* field is defined by the user in the **call application voice** *name file location* command. In this example, the POTS dial peer uses the **application onramp** command because that is the name that was previously defined with the command **call application voice onramp flash:app_faxmail_onramp.2.0.1.3.tcl**.

For the outbound VoIP side, a multimedia or MMoIP dial-peer is necessary instead of the usual VoIP dial peer. Like the POTS dial-peer, the MMoIP dial-peer also needs the command **application fax_on_vfc_onramp_app out-bound**. This application command references a script that can be seen when you look at the command **show call application voice summary**. The script that is needed is fax_on_vfc_onramp_app. It is also important to remember the outbound keyword so that this application is only used on outbound calls through the MMoIP dial-peer.

The destination-pattern command is used to match the inbound call number to a specific outbound MMoIP dial-peer. In most circumstances, this dial-peer matches with a user's inbound fax number. The **information-type fax** command associates the outbound MMoIP peer with T.37 fax. Without this command in the dial-peer, the gateway does not use the MMoIP peers and the onramp fax call fails.

The **session target mailto:***email address* command identifies who the end user is from an e-mail perspective. This is used to address the e-mail sent to the mail server. All fax e-mails are sent to the mailbox defined by the dial-peer.

The following example shows a configuration for an incoming POTS dial-peer to match any inbound called number that comes into the gateway:

```
se-10-0-0-0(config)# dial-peer voice 9995590 pots
 application onramp
 incoming called-number .
 direct-inward-dial
 port 2/1/0
!
```

The following example shows a configuration for an outbound multimedia or MMoIP dial-peer that references the on-ramp script:

```
se-10-0-0-0(config)# dial-peer voice 1 mmoip
 application fax_on_vfc_onramp_app out-bound
 destination-pattern 9995590
 information-type fax
session target mailto:$d$@sakapur.cue.com
```

Required Data for This Procedure

This procedure requires the username and hostname for an e-mail's "From" field. This enables the user to see "*username@hostname*" in an e-mail's "From" field.

SUMMARY STEPS

1. **copy tftp flash**
2. **config t**
3. **fax interface-type fax-mail**
4. **config t**
5. **call application voice onramp flash:app_faxmail_onramp.2.0.1.3.tcl**
6. **ip domain name** *domain_name*
7. **mta send server** [*IP address* | *DNSname*] *port_number*
8. **mta send with-subject both**
9. **mta send mail-from username** *name*
10. **mta send mail-from hostname** *name*
11. **end**

DETAILED STEPS

	Command or Action	Purpose

Step 1	**`copy tftp flash`**
	Example:
	`se-10-0-0-0# copy tftp flash`
		Loads a TcL script that the gateway must run when it processes the received fax calls.
		Note You can download the required script (app_faxmail_onramp.2.0.1.3.tcl.) from Cisco.com, in the Access section of Downloads under TcLware.

Step 2	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 3	**`fax interface-type fax-mail`**
	Example:
	`se-10-0-0-0(config)# fax interface-type fax-mail`
		Configures the gateway to process and forward fax calls. Also makes T.37 router debugs available.
		Note After this command, reload the router.

Step 4	**`config t`**
	Example:
	`se-10-0-0-0# config t`
		Enters configuration mode.

Step 5	**`call application voice onramp flash:app_faxmail_onramp.2.0.1.3.tcl`**
	Example:
	`se-10-0-0-0(config)# call application voice onramp flash:app_faxmail_onramp.2.0.1.3.tcl`
		Specifies where the router can find and read the TcL script that the gateway needs to process received fax calls.

	Command or Action	Purpose
Step 6	**ip domain name** *domain_name* **Example:** `se-10-0-0-0(config)# ip domain name gateway.com`	Specifies the domain name used by the router to establish an SMTP connection with the embedded SMTP server.
Step 7	**mta send server** [*IP address* | *DNSname*] **port** *number* **Example:** `se-10-0-0-0(config)# mta send server 192.168.113.13 port 25`	Specifies where the router sends received faxes. You can configure multiple instances of this command. However, only the first instance in the configuration is used unless when there is an SMTP transaction failure.
Step 8	**mta send with-subject both** **Example:** `se-10-0-0-0(config)# mta send with-subject both`	Configures the gateway to include the calling and called party number in an e-mails's "Subject:" field.
Step 9	**mta send mail-from username** *name* **Example:** `se-10-0-0-0(config)# mta send mail-from username smith`	Prevents SMTP transaction failures by specifying a valid username for an e-mail's "From" field. To have the calling number to appear as the username, set the username to **$s$**.
Step 10	**mta send mail-from hostname** *name* **Example:** `se-10-0-0-0(config)# mta send mail-from hostname fax-gateway.gateway.com`	Prevents SMTP transaction failures by specifying a valid hostname for an e-mail's "From" field. Used in combination with the previous command to enable the user to see "*username@hostname*" in an e-mail's "From" field.

Step 11	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Configuration Example

For a configuration example that also includes the configuration for T.37 Off-ramp, see the "Configuration Example" section on page 17.

Configuring the Fax Gateway for T.37 Off-Ramp

Prerequisites

You must configure at least one of each of the following dial peers on the off-ramp gateway for T.37

- Incoming dial peer to associate the inbound SMTP message with a called fax number
- Outgoing dial peer to route the call to an outbound telephony circuit.

The following example shows a configuration for an incoming dial peer to associate the inbound SMTP message with a called fax number:

```
dial-peer voice 2 mmoip
description off-ramp inbound VoiP from CUE
```

```
application offramp
information-type fax
incoming called-number 991
dsn delayed
dsn success
dsn failure
!
```

The following example shows a configuration for an outgoing dial peer to route the call to an outbound telephony circuit:

```
dial-peer voice 5590 pots
destination-pattern 991....
port 2/0:23
forward-digits all
prefix 9
!
```

Required Data for This Procedure

This procedure requires the username and hostname for an e-mail's "From" field. This enables the user to see "*username@hostname*" in an e-mail's "From" field.

SUMMARY STEPS

1. **copy tftp flash**
2. **config t**
3. **fax interface-type fax-mail**
4. **call application voice offramp flash:app_faxmail_offramp.2.0.1.3.tcl**
5. **mta receive maximum recipients** *number*
6. **mta receive aliases** *string*
7. **mta receive generate permanent-error**
8. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**copy tftp flash** **Example:** `se-10-0-0-0# copy tftp flash`	Loads a TcL script that the gateway must run when it processes the received fax calls. **Note** You can download the required script (app_faxmail_onramp.2.0.1.3.tcl.) from Cisco.com, in the Access section of Downloads under TcLware.
Step 2	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.

	Command or Action	Purpose
Step 3	**fax interface-type fax-mail** **Example:** `se-10-0-0-0(config)# fax interface-type fax-mail`	Configures the gateway to process and forward fax calls. Also makes T.37 router debugs available. **Note** After this command, reload the router.
Step 4	**call application voice offramp flash:app_faxmail_offramp.2.0.1.3.tcl** **Example:** `se-10-0-0-0(config)# call application voice offramp flash:app_faxmail_offramp.2.0.1.3.tcl`	Specifies where the router can find and read the TcL script that the gateway needs to process received fax calls.
Step 5	**mta receive maximum recipients** *number* **Example:** `se-10-0-0-0(config)# mta receive maximum recipients 10`	Specifies the number of simultaneous recipients for SMTP connections on the gateway to limit the resource usage of the gateway. The default value is *0*, which causes: • The gateway to not answer any SMTP requests • All Off-ramp transactions to immediately fail
Step 6	**mta receive aliases** *string* **Example:** `se-10-0-0-0(config)# mta receive aliases cue.com`	Specifies a valid hostname that will be accepted as a SMTP alias for off-ramp faxing. The string in this command can either be an IP address or DNS type hostname. You can configure multiple aliases (maximum is 10) in order to accommodate different domain names and IP addresses. **Note** If the destination hostname of the inbound mail does not exactly match the alias you configure using this command, all SMTP connections will fail.
Step 7	**mta receive generate permanent-error** **Example:** `se-10-0-0-0(config)# mta receive generate permanent-error`	Configures the router to flag every DSN message as a permanent error, so that they are immediately sent back to the sender (the IP Fax service mailbox), where the service can determine how many retries should be attempted, based on user configuration, when the is a busy signal or no answer. Otherwise, an error can be flagged as a transient DSN error and Cisco Exchange trys to resend the message for a very long time. This command is only in IOS versions 12.3(7)T and later.

Step 8	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Configuration Example

This configuration is an example of a minimal Cisco IOS configuration for Cisco Unity inbound fax capability. This example includes the configuration of both the On-ramp and Off-ramp applications. The most important configuration commands are in bold font.

```
router# show run
Building configuration...

Current configuration : 1808 bytes
!
version 12.3
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname vnt-3725-51
!
boot-start-marker
boot-end-marker
!
!
no network-clock-participate slot 2
no network-clock-participate aim 0
no network-clock-participate aim 1
voice-card 2
 dspfarm
!
no aaa new-model
ip subnet-zero
ip cef
!
!
ip domain name gateway.com
ip name-server 192.168.113.13
no ftp-server write-enable
isdn switch-type primary-ni
!
!
fax interface-type fax-mail
mta send server 192.168.113.13 port 25
mta send subject this is a test fax inbound to unity
mta send with-subject both
mta send mail-from hostname vnt-3725-51.gateway.com
mta send mail-from username fax-mail

!
!
controller T1 2/0
 framing esf
 linecode b8zs
 pri-group timeslots 1-24
!
controller T1 2/1
 framing sf
 linecode ami
!
!
interface FastEthernet0/0
 ip address 192.168.51.14 255.255.0.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial2/0:23
```

```
 no ip address
 isdn switch-type primary-ni
 isdn incoming-voice voice
 no cdp enable
!
ip default-gateway 192.168.51.1
ip classless
ip route 0.0.0.0 0.0.0.0 192.168.51.1
ip http server
!
!
control-plane
!
!
call application voice onramp flash:app_faxmail_onramp.2.0.1.3.tcl
!
!
voice-port 1/0/0
!
voice-port 1/0/1
!
dial-peer voice 9995590 pots
 application onramp
 incoming called-number .
 direct-inward-dial
 port 2/0/0
!
dial-peer voice 1 mmoip
 application fax_on_vfc_onramp_app out-bound
 destination-pattern 9995590
 information-type fax
 session target mailto:24445@cue.com
!
!

dial-peer voice 5590 pots
destination-pattern 991....
port 2/0/0
forward-digits all
prefix 9
!
dial-peer voice 2 mmoip
description off-ramp inbound VoiP from CUE
application offramp
information-type fax
incoming called-number 991
dsn delayed
dsn success
dsn failure
!

line con 0
 exec-timeout 0 0
line aux 0
line vty 0 4
 login
!
```

Configuring the Fax Gateway for the Fax Detection Application

Prerequisites

You must configure at least one of each of the following dial peers on the on-ramp gateway:

- Inbound POTS dial peer
- VoIP dial peer
- MMoIP dial peer

The following sections explain how to configure each of these dial peers.

Inbound POTS Dial Peer

When you configure an inbound POTS dial peer on the on-ramp gateway, the incoming called-number string specifies a pattern that represents either the prefix or the full E.164 telephone number (depending on your dial plan) that identifies the destination voice mail telephone number for this dial peer.

The following example shows a configuration for an inbound POTS dial peer on the on-ramp gateway:

```
se-10-0-0-0 (config)# dial-peer voice 1 pots
se-10-0-0-0 (config-dial-peer)# application fax_detect
se-10-0-0-0 (config-dial-peer)# incoming called-number 75..
se-10-0-0-0 (config-dial-peer)# direct-inward-dial
se-10-0-0-0 (config-dial-peer)# exit
```

VoIP Dial Peer

You must configure at least one outbound VoIP dial peer on the on-ramp gateway for voice messaging. In the example below, the IP address of the voice mail server is 172.16.2.2. If you have already configured an outgoing VoIP dial peer on this gateway with the appropriate destination pattern, you do not need to configure another one; there are no different dial-peer parameters for fax detection on the outbound VoIP dial peer for voice.

The following example shows a configuration for an outbound VOIP dial peer on the on-ramp gateway:

```
se-10-0-0-0 (config)# dial-peer voice 2 voip
se-10-0-0-0 (config-dial-peer)# destination-pattern 75..
se-10-0-0-0 (config-dial-peer)# session target ipv4:172.16.2.2
se-10-0-0-0 (config-dial-peer)# dtmf-relay h245-signal
se-10-0-0-0 (config-dial-peer)# fax rate disable
se-10-0-0-0 (config-dial-peer)# exit
```

MMoIP Dial Peer

You must configure at least one outbound MMoIP dial peer on the on-ramp gateway. In the following example, the session target command specifies an address to which faxes are e-mailed, where the **$d$** wildcard is replaced by the destination pattern.

The following example shows a configuration for an outbound MMoIP dial peer on the on-ramp gateway:

```
se-10-0-0-0 (config)# dial-peer voice 7 mmoip
se-10-0-0-0 (config-dial-peer)# application fax_on_vfc_onramp_app out-bound
se-10-0-0-0 (config-dial-peer)# destination-pattern 75..
se-10-0-0-0 (config-dial-peer)# information-type fax
se-10-0-0-0 (config-dial-peer)# session target mailto:$d$@mail-server.com
se-10-0-0-0 (config-dial-peer)# exit
```

Required Data for This Procedure

This procedure requires the domain name and hostname for the fax detection gateway.

SUMMARY STEPS

1. **config t**
2. **ip domain-name** *domain_name*
3. **hostname** *host_name*
4. **call application voice offramp flash:app_faxmail_offramp.2.0.1.3.tcl**
5. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**ip domain-name** *domain_name* **Example:** `se-10-0-0-0(config)# ip domain-name faxdetection.com`	Configures the domain on the on-ramp gateway.
Step 3	**hostname** *host_name* **Example:** `se-10-0-0-0(config)# hostname server23`	Configures the hostname on the on-ramp gateway.
Step 4	**call application voice fax_detect flash:fax_detect_2.1.2.0.tcl** **Example:** `se-10-0-0-0(config)# call application voice fax_detect flash:fax_detect_2.1.2.0.tcl`	Specifies where the router can find the fax detection application and load it onto the on-ramp gateway.

Step 5	**end**
	Example:
	`se-10-0-0-0(config)# end`
		Returns to privileged EXEC mode.

Troubleshooting

This chapter provides information on troubleshooting and contains the following sections:

- Troubleshooting Guidelines, page 1
- Troubleshooting Commands, page 6

Also check *Cisco Unity Express Installation and Upgrade Guide* in case system limitations are involved in the problem under consideration.

Tip Bookmark the Cisco Unity Express documentation home page for easy access to all the documents. Print out and have available the documentation for these Ongoing and As-Needed tasks.

Troubleshooting Guidelines

The following sections provide information and suggestions for troubleshooting the Cisco Unity Express configuration and applications:

- System Reports, page 1
- Log Files, page 2
- Users and Groups, page 2
- Hardware and Software, page 2
- Voice Mail, page 5
- Message Waiting Indicators (MWIs) (Cisco Unified CME Only), page 5
- Auto-Attendant Prompts, page 6

Tip The Cisco Technical Support & Documentation website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.

System Reports

Cisco Unity Express provides the following system reports in both the graphical user interface (GUI) and the command-line interface (CLI):

- Mailbox and message statistics
- Mailbox size monitoring
- Backup and restore history
- System hardware parameters
- Memory and CPU usage (CLI only)
- Call history

Log Files

Symptom: I cannot display log files in the GUI.

Explanation Log files are kept for error reporting and troubleshooting. The GUI does not have access to system error messages.

Recommended Action

Use the CLI to display log files.

Users and Groups

Symptom: I cannot get in to the GUI.

Explanation You forgot to enter a system administrator during the initialization wizard.

Recommended Action Use the administrator login ID created during the post-installation procedure or create an administrator login ID using the following CLI commands, starting in Cisco Unity Express EXEC mode, where *user-id* is the user ID and *password* is the subscriber's password:

a. cue-10-0-0-0# **username** *user-id* **create**

b. cue-10-0-0-0# **username** *user-id* **password** *password*

c. cue-10-0-0-0# **config t**

d. cue-10-0-0-0(config)# **groupname Administrators member** *user-id*

Symptom: I need to recover a user's password or personal identification number (PIN).

Explanation The subscriber has forgotten the password or PIN.

Recommended Action For security reasons, passwords and PINs are not displayed on the screen or printed out. You must create a new password or PIN and give that new code to the subscriber. See "Adding and Modifying a Group" on page 7 for the commands to create a new password or PIN.

Hardware and Software

Rebooting the System

Symptom: Is it necessary to reboot the router when rebooting the Cisco Unity Express module?

Explanation A reboot of the Cisco Unity Express module does not require a reboot of the router. The Cisco Unity Express module and the router can be rebooted independently of each other. However, if you reboot the router, no calls will reach the module until IP connectivity is reestablished between the router and the module.

Caution Always do a shutdown of the module before power-cycling the router to avoid data loss or file corruption. To perform a graceful shutdown of the Cisco Unity Express module, enter the **service-module service-engine** *slot/port* **shutdown** command.To perform a graceful shutdown of the enhanced Cisco Unity Express module, enter the **service-module integrated service-engine** *slot/unit* **shutdown** command.

Setting Daylight Savings Time

Symptom: I need to set daylight savings time.

Explanation Cisco Unity Express sets daylight savings time automatically on the basis of the time zone, which is selected during the installation procedure or with the **Administration > Network Time & Time Zone Settings** GUI screen.

Communicating Between Components

Symptom: I cannot open a session in to the Cisco Unity Express module.

Explanation The TTY line associated with the module is occupied.

Recommended Action Use the **service-module service-engine** *slot*/*port* **session clear** command to clear the TTY line.

Symptom: I cannot change or remove the IP address or IP default-gateway configurations with the Cisco Unity Express CLI.

Explanation The IP address and IP default-gateway configurations are controlled from the Cisco IOS software.

Recommended Action Make the required changes from the service-engine interface.

Symptom: Service-module commands do not seem to take effect.

Explanation The service-module status might not be steady state. RBCP configuration messages go through only when the service-module is in steady state.

Recommended Action Use the **service-module service-engine** *slot*/*port* **reload** command to reload the Cisco Unity Express module.

Symptom: I cannot ping the internal address when using the IP unnumbered scheme.

Explanation The IP route table is not correct.

Recommended Action When using IP unnumbered, add a static route that points to the service-engine interface.

Symptom: I cannot set the speed of the terminal line from the router side or the Cisco Unity Express side.

Explanation Cisco Unity Express does not have a CLI command to set the speed. The speed is set to 9600, 8-N-1 on both the Cisco Unified Communications Manager and Cisco Unity Express sides. Although Cisco IOS software allows you to change the speed settings, the changes do not take effect.

Online Insertion and Removal (OIR)

Symptom: I did an OIR of the Cisco Unity Express network module on my router but it does not seem to be working.

Explanation Only the Cisco 3745 and 3845 routers support OIR. OIR is not available on the AIM.

Symptom: I did an OIR on the Cisco 3745. Now the Cisco Unity Express network module is not working.

Explanation The Cisco Unity Express network module must be shutdown before OIR.

Recommended Action OIR requires the following steps:

a. Shut down the service-engine interface.

b. Issue the **service-module service-engine** *slot***/***port* **shutdown** command.

c. Wait for confirmation that the network module has been shut down.

d. Proceed with the OIR.

Saving and Viewing Log Files

Symptom: I need to be able to store log files to a remote location.

Recommended Action Log files are stored on the disk, which is the default location. You can configure Cisco Unity Express to store the log files to a separate server. Also, you can copy log files on the disk to a separate server if they need to be kept for history purposes, for example:

```
copy log filename.log url ftp://ftp-user-id:ftp-user-passwd@ftp-ip-address/directory
```

```
se-10-0-0-0# copy log messages.log url ftp://admin:voice@172.168.0.5/log_history
```

Symptom: I cannot display the contents of log files on the GUI.

Explanation The GUI cannot display log files. Troubleshooting commands and files are available only through the CLI.

Recommended Action Copy the log files from Cisco Unity Express to an external server and use a text editor, such as **vi**, to display the content.

Saving Configuration Changes

Symptom: I lost some configuration data when the GUI timer expired.

Explanation You did not save the data while you were entering it.

Recommended Action While making some configuration changes in the GUI, use the **Apply** icon to save your changes to the running configuration before the timer logs you out of the system. If the timer logs you out and you did not use the **Apply** icon, your changes are not saved.

Note The timer affects only the GUI, not the CLI.

Symptom: I lost configuration data when I rebooted the system.

Explanation You did not save the data before the reboot.

Recommended Action Perform a **Save Configuration** operation in the GUI or enter a **copy running-config startup-config** command in the CLI to copy your changes from the running configuration to the startup configuration. When Cisco Unity Express reboots, it reloads the startup configuration.

Note Voice-mail messages, which are considered application data and are saved directly to the disk, are preserved automatically in the startup configuration. (They should be backed up to preserve them on another server in case of a power outage or a new installation.) All other configuration changes require an explicit "save configuration" operation to preserve them in the startup configuration.

Voice Mail

Symptom: A subscriber received a message with an envelope that says "unknown caller."

Explanation Cisco Unity Express has a Lightweight Directory Access Protocol (LDAP) directory with the names and extensions of the subscribers who have voice mailboxes. When a message comes in, Cisco Unity Express tries to match the caller's ID (name or extension) to an entry in the LDAP directory. If a match is found, the subscriber's name or extension is included in the message envelope.

If a subscriber is configured on the Cisco Unified CME or Cisco Unified Communications Manager platform but not in Cisco Unity Express, for example, Cisco Unity Express has no record of that subscriber in its directory and announces that caller as "unknown caller."

Recommended Action You may want to synchronize the platform and Cisco Unity Express databases if some platform subscribers are not defined in the directory.

Message Waiting Indicators (MWIs) (Cisco Unified CME Only)

Symptom: After upgrading to a new version of Cisco Unity Express, the MWIs do not light up even when messages are left in the mailboxes.

Explanation The upgrade procedure removed the IP address of the Session Initiation Protocol (SIP) subsystem.

Recommended Action Reconfigure the SIP IP address to point to the Cisco Unified CME router.

Auto-Attendant Prompts

Symptom: The custom auto-attendant prompt is not working.

Recommended Action Verify that the prompt format is CCITT G.711 u-law, 8kHz, 8-bit, Mono.

Checking Log and Trace Files

To check the log and trace files on the flash memory, use the **show logs** command in Cisco Unity Express EXEC mode.

```
show logs
```

Logging and tracing to flash memory is turned off by default. Executing the **log trace** command starts the log and trace functions immediately.

The command displays the atrace.log and messages.log files. Each file has a fixed length of 10 MB, and tracing or logging stops automatically when the file reaches this length. New files overwrite the old files.

Troubleshooting Commands

Table 24-1 lists Cisco Unity Express troubleshooting commands. Cisco technical support personnel may request that you run one or more of these commands when troubleshooting a problem. Cisco technical support personnel will provide additional information about the commands at that time.

Caution Some of these commands may impact performance of your system. We recommend that you do not use these commands unless directed to do so by Cisco Technical Support.

Table 24-1 Troubleshooting Commands

Command	Purpose	Cisco Unity Express EXEC Mode	Cisco Unity Express Configuration Mode
log console monitor *module* **all**	Displays messages on the console.	Yes	—
log console {**errors** | **info** | **warning**}	Displays messages on the console.	—	Yes
log server address {*ip-address* | *hostname*}	Configures an external server for storing log files.	—	Yes
show arp	Displays the Cisco Unity Express ARP table entries.	Yes	—
show crash buffer	Displays the most recent crash log.	Yes	—
show errors	Displays any errors reported in the messages log.	Yes	—

Table 24-1 Troubleshooting Commands (continued)

Command	Purpose	Cisco Unity Express EXEC Mode	Cisco Unity Express Configuration Mode
show exception	Displays any exceptions that are thrown out.	Yes	—
show interfaces	Displays all available interfaces.	Yes	—
show log name *filename*	Displays a specific log.	Yes	—
show logging	Displays the current active logging level.	Yes	—
show logs	Displays a list of log files.	Yes	—
show memory	Displays current Cisco Unity Express memory statistics.	Yes	—
show processes	Displays CPU or memory processes.	Yes	—
show software directory {**downgrade** | **download**}	Displays configured software information.	Yes	—
show software download server	Displays configured software information.	Yes	—
show software licenses	Displays configured software information.	Yes	—
show software packages	Displays configured software information.	Yes	—
show software versions [**detail**]	Displays configured software information.	Yes	—
show tech-support	Displays complete system information.	Yes	—
show trace	Do not use except by permission from Cisco Technical Support.	Yes	—
show version	Displays the version of all hardware components.	Yes	—
trace all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace caff-sip all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace ccn all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace config-ccn all	Do not use except by permission from Cisco Technical Support.	Yes	—

Table 24-1 Troubleshooting Commands (continued)

Command	Purpose	Cisco Unity Express EXEC Mode	Cisco Unity Express Configuration Mode
trace configapi all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace dbclient all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace dns all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace dns_cache all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace entityManager all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace imap all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace management all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace networking all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace ntp all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace smtpclient all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace snmp all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace superthread all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace sysdb all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace udppacer all	Do not use except by permission from Cisco Technical Support.	Yes	—

Table 24-1 Troubleshooting Commands (continued)

Command	Purpose	Cisco Unity Express EXEC Mode	Cisco Unity Express Configuration Mode
trace vmclient all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace voicemail all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace voiceview all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace voiceview-ccn all	Do not use except by permission from Cisco Technical Support.	Yes	—
trace webInterface all	Do not use except by permission from Cisco Technical Support.	Yes	—

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